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FOLLOWUP STUDIES OF THE DETERMINANTS OF
EDUCATIONAL-VOCATIONAL CHOICES.
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AN INVESTIGATION WAS MADE INTO THE DETERMINATION OF THE EDUCATIONAL AND VOCATIONAL CHOICES OF PUBLIC SCHOOL AND UNIVERSITY STUDENTS. SIX INDIVIDUAL STUDIES WERE CONDUCTED, EACH DEVOTED TO SPECIFIC QUESTIONS INVOLVING DETAILED OBJECTIVES, PROCEDURES, ANALYSES, FINDINGS, AND SPECIFIC IMPLICATIONS. THE QUESTIONS WERE--(1) HOW STABLE ARE VARIOUS REPORTED DETERMINANTS OF COLLEGE ATTENDANCE AS MEASURED IN THE FRESHMAN YEAR AND IN THE SENIOR YEAR, (2) HOW STABLE ARE VARIOUS REPORTED DETERMINANTS OF HIGH SCHOOL STUDY SPECIALIZATION AS MEASURED PROSPECTIVELY IN GRADE 9 AND RETROSPECTIVELY IN GRADE 11, (3) WHAT ARE SOME OF THE MAJOR FACTORS WHICH ACCOUNT FOR THE DECISION TO ATTEND COLLEGE, (4) HOW DO STUDENTS WHO WILL NOT GRADUATE IN 4 YEARS FROM THE COLLEGE THEY ENTERED AS FRESHMAN COMPARE ON MAJOR FACTORS IN COLLEGE ATTENDANCE WITH THOSE WHO REMAINED IN THE SAME UNDERGRADUATE COLLEGE TO SENIOR STATUS. SUBJECTS WERE DRAWN FROM 1,627 PUBLIC SCHOOL PUPILS WHO WERE IN GRADE 9 IN THE SPRING OF 1960 AND 1,596 STUDENTS WHO WERE STATE UNIVERSITY FRESHMEN DURING 1960. STUDIES CONDUCTED WERE DESCRIPTIVE, LONGITUDINAL, AND COMPARATIVE. CRITERIA OF EDUCATIONAL-OCCUPATIONAL STATUS ON FOLLOWUP AS COMPARED TO EDUCATIONAL STATUS 3 YEARS EARLIER DETERMINED ASSIGNMENT TO CONTROL AND EXPERIMENTAL GROUPS. DEPENDENT MEASURES INCLUDED REPORTED DETERMINANTS, MEASURED ABILITY, EDUCATIONAL-OCCUPATIONAL PLANS, AND SELECTED SOCIAL-PERSONAL CHARACTERISTICS. DIFFERENCES BETWEEN INCONSISTENT AND CONSISTENT GROUPS WERE TESTED FOR SIGNIFICANCE. THE STABILITY OF EACH ITEM WAS MEASURED BY INDICES OF RELATIONSHIPS AND ITEMS, AND SCALES WERE CORRELATED WITH EDUCATIONAL-OCCUPATIONAL STATUS IN THE FOLLOWUP. (HB)

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FOLLOW-UP STUDIES OF THE DETERMINANTS OF EDUCATIONAL-VOCATIONAL CHOICES

COOPERATIVE RESEARCH PROJECT
NO. 2109

ARTHUR A. DOLE

UNIVERSITY OF HAWAII

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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FOLLOW-UP STUDIES OF THE DETERMINANTS OF EDUCATIONAL-VOCATIONAL CHOICES

Cooperative Research Project No. 2109

Arthur A. Dole

University of Hawaii

Honolulu, Hawaii

1965

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CHAPTER I

INTRODUCTION

Change and Constancy

Change and constancy are contrasting characteristics in human behavior. As young people progress in America through its educational institutions and eventually enter occupations, some change their directions, alter their aspirations, shift from one educational specialization to another; others follow a constant and consistent course over time.

It is clear from observation and research that in a general sense change and constancy may be determined by environmental forces and by psychological forces. Persons adapt to shifting circumstances, or, in the fact of relatively fixed external situations, they may modify their actions because of changes within themselves. The familiar paradigm in psychology--stimulus-person-response--is, of course, an attempt to conceptualize how variation in behavior might occur.

For young people in school and college the most important environmental forces within the prevailing social system are probably such subsystems as community, school, family, and friends. Psychological forces are described by such terms as needs, values, interests, abilities, and skills. To account for changes in psychological forces learning or development may be inferred. To account for changes in the impinging environment such expressions as experience, accident, contingency, trauma, and, if planned, education are common used.

Many, more specific aspects of change and constancy, seem far less clear at the present time. Among young people, for example: Who is consistent and who stable? Are variability and invariability themselves general or specific individual characteristics? How are they related to developmental processes? Under what conditions is manipulation of change effective or desirable in contrast to the encouragement of self-direction? What might be the social consequences when decisions made at important choice points are later revised?

The structure of this research is relatively simple. Young persons responded to the same stimulus (an inventory) on two occasions, before and after a crucial period in their development and these individuals were followed-up to determine their educational and vocational status after undergoing the educational experience of high school or of college. The data were analyzed in terms of change and constancy. Inferences were drawn about the effects of various known educational environmental forces (secondary school program, college) and of psychological forces (values, interests, perceived influences) upon persons. The phenomena under study are not in the least simple, however. It is well to remember that within the experience of each subject during the period of the investigation there were large numbers of life events, contingencies which were not controlled in a laboratory sense. The impact of these events, that is what responses they may have reinforced and how they may have interacted with psychological processes during a period of growth, was examined only in a gross and indirect sense. Perhaps the greatest contribution of a large sample survey such as this one may be simply the identification and description of some of the more important forces associated with change and constancy. The way may then be prepared for a closer study of interrelationships.

Overview

In this report a series of follow-up studies on 9th grade and state university freshman samples is presented. A study of values reported by large student samples within a single state (Dole, 1961) had suggested that the determinants of educational and vocational choices were multiple and complex. Specifically, the characteristics of those who altered their educational plans during high school or college are compared with those who were constant. Emphasis is placed on the stability and structure of reported determinants and on their relationship to follow-up status. The design may be characterized in brief as comprehensive and longitudinal.

Importance

When the follow-up studies were initiated it was felt that the findings might be important on several counts. For one thing, descriptive and analytical studies might lay the groundwork for experimental investigations as suggested above; furthermore, they might identify more clearly some of the salient variables in educational decision making. They might contribute to an adequate theory of educational and career development. A practical consequence could be improved manpower utilization at a time of national concern because of the impact of technical and social changes. If dropout from school and college, academic failure, inappropriate educational decisions and under and over aspiration are costly to individuals and to national psychosocial health, these studies might contribute to the reduction of such problems. Finally, these studies as they were conceived, might suggest ways of improving curricular structures and guidance and counseling practices in American schools and colleges.

Objectives

This research represents an intermediate state in the development of progressively more complex answers to the broad general question: How are the educational and vocational choices of public school and university students determined? It continues logically from the study of the values, external influences and interests reported by young people and adult students in Hawaii as determining their educational and post-educational decisions (Dole, 1961).

The objectives of this investigation may be put in the form of six broad questions:

1. How stable are various reported determinants of college attendance as measured in the freshman year concurrently and retrospectively in the senior year?

2. How stable are various reported determinants of high school study specialization as measured prospectively in grade 9 and retrospectively in grade 11?

3. What are some of the major factors which account for the decision to attend college?

4. What are some of the major factors which account for educational choice at the pre-college level?

5. How do students who will not graduate in four years from the college they entered as freshman compare on major factors in college attendance with those who remained in the same undergraduate college to senior status?

6. How do students who changed their educational and vocational plans compare on determinant items and factors with those who were consistent in their plans from grade 9 to the year following high school graduation?

Organization of Report

A single chapter will be devoted to each of these six major objectives, including for each detailed objectives, procedures, analyses, findings, and specific implications. Before presenting this series of six related studies, a review of the literature will precede consideration of general problems in developing the project design and the clarification of terms and theoretical assumptions. In the final chapter, findings for all these studies will provide the basis for an integrated presentation of general conclusions and of implications for theory and practice.

CHAPTER II

RELATED RESEARCH

In this chapter related research since 1961 in occupational psychology is reviewed. If they were not included in the preceding report, studies on variables associated with choice of secondary school program and with college attendance are also cited. Following a brief consideration of recent thinking in general about variation and stability in human behavior, pertinent research on change and constancy in college and high school progress and in psychological forces during college is examined.

Occupational Psychology

The final report on the first stage in this research series (Dole, 1961) stressed the complexity of educational choice as a process not entirely identical with occupational choice. Continuities of reported and social-personal determinants were identified across educational levels. Many determinants were salient to specific choices within levels.

In his review of the literature in that report (Dole, 1961) the present investigator indicated that the theoretical treatment of career development by Roe (1956); Super (1957); Ginzberg, Ginsberg, Axelrad, and Herma (1951); the consideration of values by McClelland, Baldwin, Bronfenbrenner, and Strodtbeck (1958); Jacob (1957); Goldsen, Rosenberg, Williams, and Suchman (1960) and the longitudinal studies of students after high school by Berdie (1954) and Rothney (1958) were generally pertinent to the present research. Among investigations published since 1961 in the psychology of occupations those of Tyler and Sundstrom (1964), Super (1962), Holland (1963) and Astin and Nichols (1964) seem especially important as background.

Tyler and Sundstrom (1964), moving away from a linear trait theory, have suggested that possibility structure within a temporal framework as well as interests and values account for career decision. Their design differed considerably from that of this study; their research was intensive, cross-cultural, limited to small groups of secondary pupils in Oregon and Belgium, and used open-ended research instruments. However, their ideas about the place of values in decision making and their concept of choice strategies have influenced the present investigator in interpreting his results.

Super's work values inventory was constructed as part of his career development study of 9th grade boys. His factor analysis of the occupational value domain (Super, 1962) permits useful comparisons with the factorial structure of reported determinants of educational decisions.

Holland (1963) tested a theory of vocational choice and personality types in a four-year longitudinal study of a high ability college sample. The direction of vocational choice (major field) was significantly related to appropriate personal orientations, defined by the Strong Vocational Interest Blank profile. Also using a sample of National Merit scholars, Astin and Nichols (1964) have recently related seven identifiable life goal factors to career preferences.

Factors Associated with College Attendance

Two recent large sample studies of the decision to attend college have important implications for the present research. Stroup and Andrew (1959) analyzed questionnaire returns of 12,706 Arkansas high school seniors who had been classified on the basis of follow-up data supplied by the high schools. Among factors associated with college attendance were enrollment in college preparatory curriculum in high school, ACE score above national senior median, desire to prepare for a vocation, interest in liberal education, male sex status, family income, family attitude, parental occupation, and professional goals.

As part of their comprehensive longitudinal inventory of American youth, the Project Talent Research group (Flanagan, Davis, Dailey, Skaycroft, Orr, Goldberg and Neyman, 1964) mailed questionnaires to 88,160 young men and women 12-18 months after completion of their 12th grade year. After four copies and several reminders had been sent out, 70 per cent had returned usable questionnaires. An enormous amount of data was gathered. The following conclusions seem especially relevant to the problem in Hawaii: About 43 per cent of the seniors entered a recognized two-year or four-year college within a year after leaving high school. Entrance to college was significantly associated with academic aptitude; with a college preparatory curriculum; with more affluent, more encouraging, better educated families; and with geographic region.

A series of studies sponsored by the Center for Higher Education (e.g., Farwell, Warren and McConnell, 1962; Heist, McConnell, Matsler and Williams, 1961; and Darley, 1962) emphasize the diversity in characteristics among American colleges and examine the relationships of ability, performance, measured personality traits, socioeconomic status, sex and neighborhood to type of college. Because of their findings it seems important to include in this report a description of the University of Hawaii as an environment and a discussion of generality of findings.

Variables Associated with Secondary Program

Relatively little attention has been paid recently to the selection of high school curriculum except in New England. An issue of the Review of Educational Research in 1963 devoted to curriculum planning and development cited no research during the past three years which was directly concerned with pupil decisions about their curricula.

Cass and Tiedeman (1960) related "garden variety" guidance information--measures of general ability, interest, aptitude, age, sex and family income--obtained from 884 beginning freshmen in nine Maine secondary schools to six curricula. Three significant functions--identified as sex, college intention, and interests--appeared to discriminate groups. Curriculum choices were found to be differentiated by 7 of 10 Kuder interests; by clerical, mechanical, and scholastic aptitude; as well as by age, family economic circumstances and sex.

> Little do we realize from such data the minor role of aptitude in curriculum choice. The major determinants in the choice appear as limited by permissible sex roles, family circumstances, and emerging orientation to school, (to be) people, things and ideas . . . (Cass and Tiedeman, 1960, p. 542.)

As part of a ten year longitudinal study of 111 eighth grade boys and girls in a Massachusetts school Gribbons and Lohnes (1964) demonstrated that their interview schedule, Readiness for Vocational Planning, predicted later high school curriculum grouping. Within the RVP evidence for self-ratings and accuracy of self-appraisal contributed most heavily to its discriminatory power. The efficiency of the instrument did not improve when re-administered to the same population after two years.

Change and Constancy

Turning now to the theme of this research--constancy and change among students and determinants--little directly related research has appeared, particularly below the college level apart from dropout. Bloom (1964), Fiske and Maddi (1961), and Fiske (1963) have provided a general framework for the understanding of variation in human behavior over time. On the basis of laboratory and longitudinal studies the assumption seems justified that variation is lawful and predictable in a given behavioral domain once the characteristics of environment and person are defined. Attitudes, interests, values, and personality traits as they have been studied have been found much less stable over time than physical or cognitive characteristics. Bloom (1964) attributes some of the variance in typical studies to the superficial character of self-report instruments and to the inaccuracy, misperception or resistance which may distort self-revelation. Fiske (1963) has called attention to the potential contribution of scoring artifacts and idiosyncrasy to instability in measuring personality. Bereiter (1962) (Webster and Bereiter, 1962) treats change in test scores as an important variable.

Secondary School

At the secondary level it is well-known that dropout (discontinuance of a plan of action) is associated with limited ability, socioeconomic disadvantage (Schiffman, 1963), lack of academic motivation, parental pressure and permissive practices in enforcing school attendance beyond a specified age. No study was identified in which determinants of program decision were associated with constancy in pursuing a program.

College

In the college phase of this research Iffert's (1957) study of persistence and attrition among approximately 13,700 men and women has been a major influence. Iffert administered a list of 25 reasons for going to college under concurrent and retrospective conditions. Few differences were found between enrolled seniors and those who had withdrawn; both groups tended to emphasize vocational reasons. In one sense the present research is in part a replication on a single college campus of Iffert's study; objectives are similar but methodologies are modified. Iffert's research can be criticized because his selection of items was limited, he depended heavily in his interpretation upon single items of unknown reliability, he accepted the retrospective accuracy of his subjects about their motivations three years before and those who returned his mail questionnaire may not have been representative of entering students.

Besides Iffert, Flanagan et al. (1964) and Darley (1962) have found that among college populations persistence toward graduation is associated with type of school. In some public universities only about 20 per cent of freshmen graduate within four years. (Yeaman, 1943). Darley (1962) has commented forcefully on the loss of human capacity such attrition rates represent. In some schools as much as one-third of the entering class each year is dismissed for academic failure. However, Jex and Merrill (1962) have shown that of one entering class at the University of Utah approximately 60 per cent earned a college degree somewhere within 14 years after matriculation.

Graduation from college is also related to occupational aspiration (Darley, 1962). Finances, ill health, marriage, military service, and lack of interest were cited by former college students in one study (Koelsche, 1956) as reasons for voluntary withdrawal. Stability in educational specialization has been associated with freshman occupational aspiration and vocational congruence in personal orientation (Holland, 1963) as well as with measured personality traits and college press (Thistlethwaite, 1960), change in measured interests (Bordin and Wilson, 1953) and with precollege experiences (Gamble, undated). Early commitment to a major field of study was significantly associated with better academic preparation for college and, for males, with slightly better first year performance (Weitz, Clarke, and Jones, 1955).

Change in Characteristics

To what extent do reported interests, values, and personality traits change over time? In reviewing the extensive literature Bloom (1964) reported most test-retest correlations were in the range from .40 to .70. Vocational interests as measured by the Strong became highly stabilized by the end of college. Younger samples tended to change more than older. But problems in methodology confound the identification of the sources of variability.

The impact of college upon values, attitudes, and personality organization may be greatest in the first two years (Lehman and Dressel, 1962). Webster (1958) found Vassar seniors more tolerant than they were as freshman but differences over time on the same scale were not significant in Beirut or Payne (Negro) students. Sanford (1956), 1962), reporting also on the Vassar study, obtained significantly different scores for seniors as compared with the same girls as freshmen on various personality traits. However, Telford and Plant (1963) question whether the impact of the college was necessarily responsible. After comparing changes on the California Psychological Inventory, Dogmatism Scale and the Allport-Vernon-Lindzey by junior college students who had completed one or two semester with those by students who had completed three or four semesters, they concluded that (Telford and Plant, 1963, p. 72) "many of the changes attributed to the college experience by others may be no more than developmental changes . . ."

After reviewing the related research it is concluded that current occupational psychology provides a valuable framework; that the correlates of college attendance have been studied much more intensively than reported determinants and that correlates and reported determinants of educational decisions before college have received little attention. Current knowledge about change and constancy in general have recently been integrated by Bloom and Fiske. Although a substantial number of studies have been reported on the flow of students through educational systems, except for studies of vocational interests and reasons for college, little is known about the relation between determinants of educational choice and later change or constancy in maintaining an educational sequence. Since research in this area poses difficult methodological and terminological problems, the following chapter will consider research strategies and define terms.

CHAPTER III

PROCEDURE

This chapter presents general considerations in the overall design of this research. After clarifying terms and theoretical assumptions, the setting in which the research was conducted, the two large populations from which samples were drawn, the two basic inventories used to measure determinants, selection of research strategies and methods of data analyses are described. Specific procedures for each of the six studies are treated separately in following chapters.

Terms and Assumptions

The final report on the first stage of these studies (Dole, 1961) proposed a working conception of educational-vocational choice. Within a context of social, cultural, and sex roles and developmental stages, a host of general and specific values, interests, and external influences--often governed by occupational goals--plus personal characteristics, all combine in a multitude of patterns. These patterns, some common and others idiosyncratic, contribute to educational choice as students follow sequences of educational positions. The present longitudinal study introduces concepts of change and stability.

Following Bloom (1964, p. 3) a stable characteristic is "one that is consistent from one point of time to another." As applied to an inventory item, stability refers to those features which are constant, unwavering--permanent features which are not liable to essential change over some specified period of time.

Consistent is used to describe a subject who is stable and, who moves through a series of educational-vocational positions which are logically harmonious with one another.

Constant is used to describe a subject who is consistent and who also maintains a series of related educational or vocational positions in the same educational system without interruption.

A congruent characteristics item, score or decision is in harmony or agreement with other characteristics, items, scores, or decisions. Unlike Holland (1962) who has applied the term to agreement over time, congruence is reserved here for the description of concurrent relationships which may or may not be stable. It seems desirable thus to distinguish agreement at one point in time from agreement over two or more points in time (stable, constant, consistent).

The opposites of these terms are unstable, inconstant, inconsistent, and incongruent. Since especially heavy use is made of the expression inconsistent, its definition is elaborated. Inconsistent is frequently used in this report to describe a subject whose educational positions are inharmonious and unstable, who fails to decide upon logically related courses of action as he progresses within educational and vocational sequences. An inconstant subject is one whose progress has been interrupted.

One objective of the present research as indicated in the preceding chapter is to relate the phenomena of change and stability in young persons and in their responses to reported determinant items to a broad theory of choice behavior. There is, of course, no assumption that stability is necessarily desirable nor inconsistency undesirable. However, the results of these studies may cast light on some of the characteristics of consistent and inconsistent persons, identify changing and stable determinant patterns, and explore some of the consequences to students who maintain or alter selected educational directions.

Setting

The use of samples from Hawaii offers both special advantages and disadvantages to the behavioral scientist. A brief description of the psychosocial and educational context for this research may help to clarify this point. In many respects Hawaii falls within the middle range when compared to other American states. Standard of living, income, home ownership, literacy, goods and services, architecture, highways, exposure to American movies, television, and other communications media are typically American. Physically and in climate Hawaii most resembles parts of California. Four-fifths of the 600,000 residents live in Honolulu and its suburbs on the island of Oahu. Most of the remainder live on one of four adjacent islands in small towns or rural districts. Services to military installation, sugar, tourism, and pineapple are the major sources of income. Up until fifty years ago Hawaii was largely a plantation economy. At present it is considered a mature, modern state, politically, economically and culturally (see especially Fuchs, 1961; Hormann, 1963; Lind, 1955; and U.S. Bureau of Census, 1962.) It is more advanced than such other non-contiguous areas as Alaska, Puerto Rico, Virgin Islands, and Samoa.

Three features distinguish Hawaii from other states: isolation, ethnic origins, and cultural interchange. First, as an island community it is 2,500 miles from the Pacific coast. Before the era of jet planes and radio, isolation was a greater problem than it now is. However, it is still more difficult for individuals, especially those with limited economic resources, to move in or out than it would be for residents of communities on the continent.

Because of its small size and geographic location Hawaii lends itself well to longitudinal studies. More than in other states populations tend to remain in Hawaii. Samples of school children in this research were found to be less mobile than samples in California (Dole, 1965). Of Hawaii high school juniors, 85 per cent had lived in Hawaii 16 years or more (Dole and Sherman, 1963b), and of University of Hawaii seniors, 77 per cent had attended school in Hawaii 12 or more years before entering college (Dole and Sherman, 1964b). On the other hand, Dole and Iwakami (1961) identified a group of transients among a 6th grade sample who were the children of military personnel. In student populations it is probable that outmigration exceeds immigration.

Secondly, Hawaii is distinctive in the national-ethnic origins of its inhabitants. Martorana and Hollis (1962) in describing the setting for higher education in Hawaii have estimated that approximately 32 per cent are of Japanese ancestry, 32 per cent of Caucasian background (many of them transients in military or civilian status); 10 per cent Filipino; 6 per cent of Chinese ancestry; and the remaining 20 per cent Hawaiian, part-Hawaiian and other. According to Lind (1955) the process of acculturation is well-advanced for those of Oriental ancestry. However, in comparison with other states, the Hawaiians are like American Indians--original inhabitants some of whom have had difficulty in coping with modern civilization. The first modern immigrants were missionaries, white Anglo-Saxon Protestants from New England whose descendants are comparable in social status to the upper-uppers in Yankee City (Warner, Havighurst and Loeb, 1944). Those who came to Hawaii from China and Japan brought with them quite frequently well-established cultures (DeVos and Mizushima, 1962) and like the Jews from Russia and Germany who settled in New York City (Glazer and Moynihan, 1963) their descendants have moved into business and the professions in large numbers. It is important to stress the fact that in speech, dress, and customs a Chang or Arakaki in a Hawaii school is often as indistinguishable from a Smith or Jones as is an Anderson in Minnesota, an O'Neill in Boston or a Cohen in New York. Many but not all Oriental students lack the dialect which tended to set apart their fathers and grandfathers, from other Americans. On the other hand, some cultural differences do exist in respect to family relationships and attitudes toward work and education. In designing this research it was considered important to treat national-ethnic origin as a major variable.

A third distinguishing feature about Hawaii is its position as an interchange between East and West. Ideas, goods, and customs from the Orient and Occident commingle. The inhabitants are exposed directly and indirectly to a flow of tourists, military personnel, students, sailors, business and professional people, and travelers whose destination is Asia or America. These visitors bring with them attitudes, fashions, fads, and diseases from all over the world. The school boy in Hawaii may be isolated in a physical sense but he can hardly be considered to live in a backwater where stimulation is markedly reduced.

These characteristics of Hawaii, isolation, ethnic origin, and cultural interchange, may indeed limit the generality of research findings. Because of them it has seemed especially important to emphasize replication on varying samples in the overall design of this research. These characteristics, however, may also prove advantageous in research. It has been noted in longitudinal studies it is easier to retain samples. There may be less variability in environmental forces. When acculturation or the adaptation of persons to environmental changes is part of the general problem under study, Hawaii's ethnic groups may be an asset. In research on individual differences within populations, if findings are confirmed in Hawaii, their generality is strengthened.

University of Hawaii

The University of Hawaii is the land grant institution for public higher education in the state. With 10,072 students in 1964 and with rapidly expanding graduate and research programs, it is acquiring many of the characteristics of the multiversity. Recent surveys by Martorana, Hollis and others (1962), and by Dole and Iwakami (1960b) have suggested that academic advising for entering freshmen has been minimal. The decision to continue beyond the high school, to select the University of Hawaii as one's college of choice, and to enter one of its six available undergraduate colleges, may be made without much professional help. By the end of his sophomore year each University of Hawaii student must also decide from among over 65 possibilities on his major area of academic concentration. But by that point, according to University records, approximately two out of five freshmen have failed to meet academic standards and one out of five has voluntarily interrupted his studies at the University of Hawaii.

The University of Hawaii's student populations tend to resemble student populations from other state universities in family income, parental occupation, vocational interests, emotional adjustment, attrition, academic ability, and proportion continuing to graduate or professional school. Their distinctive ethnic origin appears to be associated with small but significant differences in occupational preference (Dole, 1961), in acceptance of other cultural groups (Dent, Gaston, and Dole, 1964) and in need patterns (Arkoff, 1959).

Three-fourths of the University of Hawaii students live in Honolulu and vicinity and commute to class, but of seniors in 1963, 2 per cent were foreign students, 16 per cent held legal residence on a neighbor island and 5 per cent matriculated from other states (Dole and Sherman, 1964b). Academic standards are considered fairly high (Martorana and Hollis, 1962). Intercollegiate athletics and cocurricular activities perhaps receive less emphasis than on campuses with large dormitory populations. During the time of this study the East-West Center for Cultural Interchange, which has occasioned considerable national attention, was initiated. The East-West Center has added a distinct international quality--particularly at the graduate level--to the campus climate.

Samples from the University of Hawaii student body tend to be less constant and more mobile than samples from Hawaii secondary schools. The 1963-64 senior class (Dole and Sherman, 1964b) included 21 per cent who had transferred from another college; only 53 per cent had graduated from high school four years previously. Such interruptions, dismissals, and transfers may not be unusual in American public higher education, as Jex and Merrill (1962) pointed out after following an entering class at University of Utah for 14 years.

Hawaii Public Schools

The Hawaii public schools form a single unified district and thus represent the ninth largest public school system in the United States. In 1960 there were 145,134 pupils enrolled (Hawaii State Department of Education, 1961). Like many American public school systems the secondary schools in Hawaii at the time of these studies presented a curriculum which was divided into tracks or study programs. Most high schools offered five categories--college preparatory general; college preparatory scientific; technical; business occupations; and terminal.

In a supplementary report on secondary school programs in Hawaii, Dole and Sherman (1963a) described official recommendations and current practices in distributing pupils among the five minimum elective programs. Most school officials reported that they used formal procedures (orientation programs, testing, group and individual conferences) to help pupils select one category from among the five programs and that they relied heavily on interest and aptitude test results and occupational plans. In general, the decision is prepared for in grades 8 and 9, made on entrance to high school in grade 10, and may be changed thereafter on approval of parents and school officials. It is obvious that as pupils progress through designed educational experiences in secondary school their later educational, vocational, and personal careers may be profoundly influenced. At the public school level this research was designed to study the choice of secondary school program in terms of pre-high school preference, reported determinants, and status on follow-up after finishing high school.

In a project supplementing this research, Dole and Sherman (1963b) were concerned with who entered which study program in the public high schools of Hawaii and why. On the basis of a survey of 7,291 eleventh graders, interviews with pupils, teachers, and administrators, and visits to selected secondary schools they concluded that Hawaii boys and girls chose minimum elective programs which were congruent with their educational and vocational goals. Vocational interests and results of tests were salient to program as were socioeconomic attributes and attitudes about decision-making. They also pointed out that the current curricular organization and the guidance practices associated with it reinforced the assumption that the young person ought to make a choice; they may, as presently structured, fail to fit the characteristics of disadvantaged pupils. The present research at the public school level may be conceived as in part a test of the assumption of constancy in which Hawaii secondary schools represent a typical track system.

Two Populations

Two populations provided the samples which were drawn for the six studies. Characteristics of the samples used in each of the six studies will be described in succeeding chapters.

Public School Population

The public school subjects were drawn from a comprehensive population of 7,627 boys and girls who completed the inventory, What I Want to Do, during spring 1960 as 9th graders. These pupils represented 81 per cent of official enrollment figures for the state; 58 of 62 intermediate schools participated. A complete description of this population will be found in a separate report (Iwakami and Dole, 1962) and a comparative analysis of determinants reported as salient to study program choice in Dole (1961).

University of Hawaii Population

The University of Hawaii subjects were drawn from a comprehensive population of 1,792 males and females who were surveyed about their college plans during fall registration 1960, 96 per cent of Records Office enrollment figures for entering full-time students submitted usable questionnaires. Fujita and Iwakami (undated) have summarized the results of this survey.

Instruments

In the first stage of this research (Dole, 1961) two parallel inventories of reasons for educational plans were developed. What I Want to Do was a check list designed to measure the value, interest, and influence determinants of secondary study program preference. Originally a college inventory, also in check list form, was developed to measure determinants of undergraduate college selection.

Public School Studies

Evidence about test-retest reliability, suitability for the populations surveyed and concurrent and construct validity as well as a copy of What I Want to Do will be found in the preceding final report (Dole, 1961). Other measuring instruments used in the three secondary studies will be described as each of these studies is presented separately in succeeding chapters.

College Studies

The basic instrument applied to the college samples was an inventory, Reasons for Going to College (Appendix I). Subjects responded to each of the 78 items on a four-step degree of importance scale in determining the decision to attend college. Of these 78 items, 22 were adapted from Iffert (1957), 42 had been used also in the original check list instrument as part of the cross-sectional study of educational-vocational choice (Dole, 1961) and 14 were added for this investigation. The items were classified as Reasons, Values, Influences and Interests. Evidence about test-retest item reliability, suitability in the populations studied and concurrent and construct validity will be reviewed in Chapter IV.

Research Strategies

This research is directed at the phenomena of constancy and change from two vantage points: (1) the items which measured choice determinants, (2) the educational development of public school and college samples.

Stability and Change in Items

Before studying constancy and inconstancy among persons it was pertinent to assess the stability of determinant items. In earlier examination of the test-retest reliability of instruments it was found that distributions were sufficiently similar over time to justify comparisons between groups but that in many instances individuals so frequently changed their replies within a week as to raise questions about the applicability of single items in individual guidance. As a further test of the assumption of constancy among individuals in secondary guidance procedures the replies of a small sample of 11th grade students at Waialua High School were analyzed (Dole and Sherman, 1964a). For each subject who had participated in both 9th and 11th grade surveys, his prospective response to the same item before high school was compared 18 months later with his retrospective response during high school; a comprehensive sampling of all 11th graders in the state followed.

The college instrument, Reasons for Going to College, was also administered on two occasions to the same subjects both as a test of the assumption of constancy and as a test of accuracy in retrospection. On the second administration, when the surviving college students were seniors, the items were so cast in the past tense that they referred to the same decision event at the same point in time ("so far as you can remember when you entered college").

Structure of the Determinants of Educational Choice

If common factor structures could be identified, it might be possible to describe the educational choice domain more precisely and to develop factor scales. In selecting samples for factor analysis of the two instruments, diversity in educational level, specialization and socioeconomic status was stressed. It was hoped that stable factor scales characterized by generality would be useful in comparing constant and consistent students with other subjects. Accordingly a sample from three Oakland, California high schools (Dole, 1965) was selected for analysis along with two 9th grade samples, and, for the college instrument, five separate samples.

Constancy and Change in Student Plans

In studying change and constancy during the educational development of public school and college samples, status on follow-up after a period of three years determined assignment to groups which might then be compared. So far as possible follow-up status was based on available official educational records, although in the college follow-up this information was supplemented by replies of former students to a mail survey. An important practical consideration in forming groups for comparison was the size of available subsamples.

In the secondary study the 9th grade was selected as a starting point because it preceded a major educational decision--choice of an academic area of specialization in high school--which in turn shaped the nature of post-high school activity. Periodic surveys and appraisals by the collaborating agency, the Hawaii Department of Education, Research and Statistics, in grades 10, 12 and six months after graduation provided additional information about subjects which was merged on a single tape. The complete analysis of all available data in all ways was far beyond the capability of the investigator within the limits of time and finance. A major research decision then was which variables to examine. The solution was to stress reported determinants and determinant patterns and to explore selectively personal and social characteristics which might be associated with change. It was reasoned that from a practical standpoint reported determinants are the material with which parents, teachers, administrators deal when they confer with students about their plans. ("Why do you want to take a business occupations program?") Furthermore, from a theoretical view, as has been discussed, reported determinants are important parts of the educational-vocational decision process as perceived or recalled by the students. It was also reasoned that the identification of selected personal and social variables might lay the groundwork for closer statistical and experimental control in subsequent research. Since previous research (Dole, 1961), pilot studies and observation had suggested that sex, initial educational preference and ability were related to constancy, where possible these variables were accounted for in the experimental design. The relation between program preference in intermediate school and subsequent status determined assignment to consistent or inconsistent comparison groups within initial program preferences: college, technical, and business. The intensive pilot follow-up study at Waialua High School (Dole and Sherman, 1964a) and other evidence (Hawaii Territorial Commission on Children and Youth, 1958) indicate that the number of dropouts and transfers in relation to the costs of a complete follow-up was too small to justify analysis of their responses as part of this research. The basic strategy then in the public school study was to compare samples of consistent and inconsistent students on reported determinants, controlling sex, original program preference and ability.

Research strategies at the college level were comparable but not identical. College registration was selected as a crucial choice point and status after three years determined assignment to groups within colleges by sex. Since withdrawal and intercollege transfer is known to be small once senior standing is attained, it was reasoned that the surviving subjects would be well-established. The practical consideration that the subjects who were still enrolled at the University of Hawaii were much more easily available than they would be a year or more later, after they had graduated, played an important part in setting the period for follow-up.

To what extent was the college study similar to the public school follow-up? The fundamental question behind the inventory was "how did you happen to decide to come to college?" Presumably 9th graders with college program study preferences would construe the inventory items in much the same way as the college subjects. This might be much less true of 9th graders who preferred business or technical programs. In adding reasons to the inventory a new classification of determinant was included along with the value, influence, and interest items used in the secondary study. It was hoped that a Likert scale to measure degree of importance, replacing the check list form, would be a more discriminating measure of importance.

In both populations it was possible to compare groups on similar determinant patterns and similar personal and social characteristics. As in the secondary study, male and female college subjects were studied separately within several entering educational positions (Business Administration, Arts and Sciences, Engineering, and Education) with academic aptitude controlled. However, it was not possible to use comparable logic in classifying subjects on follow-up status because there were too few inconsistent students--subjects who had remained at the University of Hawaii but shifted majors or colleges. A number of classifications of inconstant students (failed, transferred, withdrew, delayed, no record), appeared preferable to the single inconsistent classification. In brief, then, the basic research strategy in the college study was to compare constant students with several different kinds of inconstant samples on determinant scales, controlling sex, original college, and ability.

Generalizability

To what extent can the findings of this study be generalized to other populations of school children and college students in less exotic settings? To answer this question, it was considered desirable to collect some evidence about the performance of non-Hawaiian samples on the basic instruments. An adaptation of the public school inventory was administered to students in three Oakland, California public high schools which were selected for diversity in their socioeconomic characteristics. As described in full in a supplementary report (Dole, 1965) determinant item differences between the sexes in both Hawaii and Oakland samples tended to exceed differences between the two school systems and differences between a Negro student body in one Oakland high school and predominantly Caucasian upper-middle class student body in a second Oakland high school did not exceed differences between Hawaii 11th graders and Oakland 12th graders. At the college level, responses of Hawaii undergraduate samples to items from Iffert's inventory were in general similar in popularity to responses of a national sample (Dole and Sherman, 1964a; Dole and Iwakami, 1960). In fact, a 1959 University of Hawaii senior sample differed no more from a 1960 sample than either sample differed from the seniors surveyed across the country in 1954.

It has seemed essential to emphasize continuities in this research (cf Dole, 1961, p. 155). It is assumed that when comparable results are found across sex, educational levels, and educational specializations greater confidence can be placed in the generality of findings. In general it has seemed preferable to risk a Type I error. It is more likely that rejected hypotheses actually are true than that accepted conclusions are false.

Analyses

Although specific methods of analysis will be described in the six succeeding studies, certain general considerations will be reviewed here. The measurement of change and constancy has posed a difficult problem. Before analyzing the data on determinant item stability a number of recent publications on change were considered (e.g., Harris, 1963; Bloom, 1964).

The approach most appropriate to the problem in the present study seemed to be that suggested by Weiss, Dawis, England, and Lofquist (1961). This is characterized as a multidescriptive approach. Change and constancy are considered to involve a number of facets. Since no existing measure appears to account for all of them several measures are obtained. For example, in analyzing the responses of the same group of individuals on two separate occasions to the same item measures of association (correlation), change in group distribution (chi square), and agreement on a specific option over time (stability) might all be reported.

In mapping some of the common major factors in the domain of educational decision standard procedures in factor analysis were applied to comparable determinant items which had been administered to diverse samples. A desired by-product was the development of factor scales for use in making tentative inferences across public school and university levels and in applying multivariate techniques.

In comparing consistent groups with inconsistent groups at the public school level both single determinant items and factor scales or a priori categories were analyzed in a 2 x 1 design, repeated on four sample pairs. In order to maximize generality simple factor scores (item totals) were used rather than exact scores. This decision presumably resulted in some loss in identifying true but more limited differences.

In comparing consistent samples with inconsistent samples in the public school population, dependent variables were analyzed in a 1 x 1 design, repeated on four sample pairs. Chi square was applied to test differences on non-continuous variables. Following Snedecor (1946) multiple regression analyses permitted tests of the significance of differences on factor scales with ability controlled.

Since the character of constancy and change studied in the college population differed from that in the public school students, methods of analyses were adapted accordingly. The relation of various (non-continuous) characteristics to follow-up status was examined by casting contingency tables. As an overall test of differences when factor scales were treated as dependent variables, analyses of variance and multiple regression, controlling for ability (Snedecor, 1946) were applied to college constant and inconstant groups in a 1 x 18 design, repeated on males and females. Subsequently the complexity of the relationships between various characteristics and factor scales became apparent but their analyses exceeds the pre-defined limits of this project. The use of more elegant multivariate techniques is contemplated. This chapter has attempted to present the general considerations which underlay decisions about specific procedures. In the six chapters which follow analyses will be described separately and more specifically in relation to the specific objectives, procedures and results for each of six studies.

CHAPTER IV

THE STABILITY OF REPORTED DETERMINANTS AMONG COLLEGE STUDENTS

In this chapter the responses of a group of college students who participated in a research survey as entering freshmen and again as seniors are examined. Using a variety of measures, the changes in personal characteristics items, plans, and attitudes are reported before analyzing the determinant items comprising Reasons for Going to College. The implications for counseling and research are discussed.

Problem and Objectives

If entering college students are asked on admission why they are attending college and the same individuals are asked again as seniors to recall why they chose to attend college, we may look with interest and with some confidence on those reasons which are highly popular under both conditions. The long-term stability of the various determinant items may be analyzed and may be compared with the stability of such other kinds of items as factual personal data, attitudes, educational plans, occupational aspirations, etc.

As noted in Chapter III, Iffert's (1957) research on a nationwide sample of the 1950 entering class stimulated this investigator to study the relation between college motivation, attrition, and persistence. Iffert had employed in part a retrospective design in studying reasons for college attendance. That is, his samples were asked to recall in 1953 why they had decided to undertake higher education "before you entered college." They were also asked to rate the importance of each item "now." Iffert found few differences in original reported academic attitudes between those who had remained in college and those who had dropped out or failed. His discussion was based primarily on comparisons by single items or by logical groupings. Others, notably Lehmann and Dressel (1962) in part and Lipset and Bendix (1959), have likewise depended upon single retrospective questions to measure changes in college student groups.

Suppose that single items cast in retrospective form are for the most part unstable or in a narrower sense inaccurate? It would then seem desirable to build factor scales within a longitudinal design before comparing consistent college students with other groups. Suppose also that substantial differences in stability are found between different kinds of items? It might then be possible to extend understanding of the relation between item content and subject response. The specific objectives of the research reported in this chapter are to: (a) compare determinant items in long-term stability with factual personal data, plans, attitudes, etc., and (b) examine the long-term stability of determinant items reported by constant students.

Surveys

The freshman and senior survey instruments were designed by the investigator, following Iffert (1957). The 1960 freshman survey was administered as part of freshman group testing procedures by the Office of Student Personnel, University of Hawaii (Fujita and Iwakami, undated). The senior survey was administered individually as part of fall registration to 1963-1964 seniors by the investigator (Dole and Sherman, 1964b).

Procedure

Constant College Students

Of 1,867 students listed by the University of Hawaii Records Office as first year students in fall, 1960, 1,792 or 96 per cent completed usable questionnaires. When the survey was repeated during fall 1963 registration, 1,279 persons, 92 per cent of those with senior status according to official figures, returned usable questionnaires.[1] Within these two groups 520 students had participated in both surveys.

The sample group of 520 can be considered representative of constant students at the University of Hawaii. A constant student is defined for purposes of this research as an individual who proceeds through the same educational institution without interruption or acceleration at a rate consistent with administrative expectations. It is estimated that the sample group included about 90 per cent of all constant seniors who entered in 1960. In Chapter VIII the 206 male and 314 female constant students will be compared with other groups within the original freshman sample.

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[1] Upon auditing 81 questionnaires were discarded because of evidence of possible lack of cooperation.

Items

The freshman questionnaire was composed of a personal data section and a 78 item opinionnaire, Reasons for Going to College. (See Appendix I.) The opinionnaire was logically divided into four groupings: Reasons, Values, Interests, and Influences. Most of the Reason items were adapted from Iffert (1957); otherwise, the items were developed from open-end responses, surveys of the literature, and interviews during the preliminary stages of this research series (Dole, 1961).

Item validity was established through individual interviews and through a number of studies (Dole, 1957; Dole and Will, 1958; Will and Dole, 1959; Dole and Iwakami, 1960a; Dole and Iwakami, 1960b; Dole, 1961; Chunn and Dole, 1963; Milstein, Chunn and Dole, 1963; Dole, 1964a; Dole, 1964b) in which items were shown to discriminate between sex, college, curricular, class, and other groups in logical fashion.

The stability over a one-week period of the value, interest, and influence items in check list form for college freshman was reported in Dole (1961, p. 160). For most items the probability that the same response would be made on two administrations exceeded 80 per cent.

The senior questionnaire was almost identical with the freshman form, except for a few modifications to fit the changed circumstances of the respondents (see Table 9, and Dole and Sherman, 1964b).[1] Of crucial importance to this research is that the opinionnaire instructions now included the phrase, ". . . so far as you can remember how you felt as a freshman . . ." and that the items were expressed in the past tense. Also a section was added in which, using identical items, the value, influence, and interest determinants of curriculum choice were inventoried. As reported in Dole and Sherman (1964b) the results were closely similar to the results on the college determinants and, therefore, will not be considered in detail here.

As in other surveys in this series the senior opinionnaire was pretested; also 5 representative seniors were interviewed after they had completed a pilot form and 15 seniors were seen individually during the academic year. The material obtained in these interviews was useful not only in substantiating the validity of the items but also in providing background for the implications section of this chapter.

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[1] The two inventories had 78 items in common. In the comparative analyses the item "some other . . . not given here" used at the end of each item classification was dropped because of its low popularity (M = 0.15) in both surveys. There were six major item modifications or additions in the senior survey. At the end of each of the four item classifications the item "None of the above" was added. Under influences "college professor" was grouped with "high school teacher" and "scholarship" was added.

In laying the groundwork for this research the Iffert form of Reasons for Going to College had been administered to 752 seniors in 1960. Dole and Iwakami (1960a, p. 27) noted that ". . . the University of Hawaii samples were quite similar to the mainland students of 1954 in their mean ratings. In fact, although the responses of men and women in Hawaii tended to correspond rather closely, the responses of the Hawaii and mainland men were more similar to one another than they were to the responses of the women in their respective groups and similarly within the Hawaii and mainland women."

To test the stability of the opinionnaire items the 1960 senior survey had been repeated after three months with 24 girls registered in the College of Nursing. Approximately one-third of the coefficients of stability obtained did not differ significantly from no correlation. Iwakami and Dole (1960, p. 13) concluded that "this questionnaire as it now stands could not be used for individual guidance with much confidence. . . . On the other hand, the opinionnaire appears to be sufficiently stable to justify the comparison of groups as small as 20 . . ."

The revised opinionnaire used with the 1963 seniors was analyzed for stability over a five-month period. The subjects were 27 male seniors in Agriculture and 24 female seniors in Nursing. The results are presented in summary in Appendix II. When items were analyzed by per cent agreement, by differences between means in degree of importance and by product-moment correlations, 35 of 79 items were considered highly unstable over five months by one or more of the three methods of measurement. As was true of the Iffert instrument, the revised Reasons for Going to College appears appropriate for concurrent group comparisons but not for individual counseling on most single items.

Analysis of Data

On the basis of a consideration of the literature, pilot studies and consultation, it was concluded that there was no single measure of stability of those known to the investigator which was entirely adequate for purposes of this research. (See especially Weiss, Dawis, England and Lofquist, 1961, pp. 41-43, and Dole, 1961, pp. 150-155.) Therefore, several measures which described quantitatively different aspects of change were used. For noncontinuous items, chi square for correlated data (McNemar, 1962, p. 225) was applied to test the significance of the changes between freshman and senior distributions. An index of stability for each item was also computed $\frac{\overline{FS}}{N}$ in which $\overline{FS}$ is the number of subjects responding to the same option on freshman and senior surveys.

In analyzing occupational and educational preferences, net change and new entrants were expressed as proportions of the freshman N for each option. Chi square was applied to the proportions entered and stable, when appropriate, to test whether a proportion within an option differed significantly from the proportion within all options. Yates correction was applied when N was 25 or below.

Reasons for Going to College items were studied in terms of absolute and relative changes in mean importance with special emphasis on the proportions indicating great importance and on the extent of relationship between the two testings as indicated by the stability of options, product-moment correlation and chi square. Although product-moment correlations were computed, it was realized for some or all items that the scale may not have been additive, that the distributions may not have been normal and that systematic changes by subjects may have been disguised--a lowering, or raising, for example, for all values because of shifts in response. Therefore, chi square was used to test the significance of the association between freshman and senior option contingencies for each item. In addition, percentages of agreement were calculated for all options within each scatterplot and separately for the "of great importance" (3) and for "of moderate importance" (2), "of slight importance" (1) and "of no importance" or "does not apply" (0) combined.[1]

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[1] The following formulae were used:

(a) Per cent agreement all options--

$$\frac{(\overline{F_oS_o} + \overline{F_1S_1} + \overline{F_2S_2} + \overline{F_3S_3})}{F_{1230}} ;$$

(b) per cent agreement of great importance-- $\frac{(\overline{F_3S_3})}{F_3}$;

(c) per cent agreement no, slight, or moderate importance--

$\frac{\overline{F_oS_o} + \overline{F_1S_1} + \overline{F_2S_2}}{F_{012}}$ in which F represents freshman survey, S senior survey, subscripts 0, 1, 2, 3 refer to degree of importance options and $\overline{F}$ denotes agreement on both surveys.

It might be noted that by obtaining the percentages of "of great importance" responses to each item it was possible to make rough comparisons with those items which had been applied in the check list form to the public school samples. Finally, appropriate summary statistics were computed within the four a priori item classifications (Reasons, Influences, Interests, Values) in order to compare changes from freshman to senior years.

Results

Characteristics

In the case of factual information such as year of high school graduation which, logically, cannot change from freshman to senior college year, a measure of stability may perhaps also be considered an index of the accuracy with which respondents have reported (Table 1). In reporting year of high school graduation, father's national-ethnic background, generation in the United States, father's education and undergraduate college entered, the sample did not change significantly in responding to the two surveys. Only for the item relating to sureness of graduation from college was there a significant difference. (Note that on the senior survey the question was phrased, "So far as you can remember now, how sure were you of graduating from college when you entered as a freshman?") However, almost half the respondents did recall accurately their answer to this item as freshmen.

A student whose response to an item in Table 2 changed from first to second administration of the survey may or may not have been reporting inaccurately. A shift, for instance, in father's occupational classification might represent either promotion or respondent error. The group changed significantly although slightly, in legal residence, and in preference for another college or curriculum, but not in father's occupational classification nor in plans for further education after college. The group increased substantially over the three-year period in sureness about field of study (not shown in table). A large proportion of individuals, more than 9 out of every 10, maintained the same legal residence but only 1 out of 4 freshmen expressed the same degree of confidence as a senior about his educational specialization.

College

The flow of students in and out of each undergraduate college during the three year period is shown in Table 3 along with an analysis by Arts and Sciences curricular group preferences. (See Appendix II for a cross-tabulation of colleges entered in 1960 by undergraduate college affiliation in fall 1963.) The data in Table 3

TABLE 1

ACCURACY OF REPORT ON SELECTED QUESTIONNAIRE ITEMS
(N = 520)

Item	Accuracy index	X^2	df
Year of high school graduation	.996	--	2
Father's national-ethnic background. . .	.962	5.25	8
Undergraduate college entered.	.960	10.52	5
Generation in United States.	.750	8.54	5
Father's education	.725	1.67	9
Sureness about graduation on entrance. .	.495	16.85**	3

Note.--X^2 for correlated groups applied to freshman survey versus senior survey option distributions.

**P< .01.

TABLE 2

STABILITY OF SELECTED ITEMS FROM FRESHMAN TO SENIOR SURVEY

(N = 520)

Item	Stability	X^2	df
Legal residence	93	10.97*	3
Prefer another college or curriculum. .	79	5.17*	1
Father's occupational classification. .	71	5.56	10
Plans for further education after college	43	10.16	4
Sureness about field of study	26	182.31**	4

*P < .05.

**P < .01.

TABLE 3

STABILITY IN UNDERGRADUATE COLLEGE AND ARTS AND SCIENCES CURRICULAR GROUP

College	Freshman survey	Senior survey	Net change	Status on senior survey	
				entered	stable
	N	N	%	%	%
Agriculture . .	19	30	+57	68**	89
Engineering . .	69	54	-22	4*	74
Business administration	42	66	+57	68**	90
Education . . .	198	188	- 5	9**	86
Nursing	32	31	- 3	9	88
Arts and sciences	160	151	- 6	16	79
All colleges. .	520	520		17	83
Arts and sciences curricular group					
Natural sciences	41	37	-10	41**	49
Social sciences	45	61	+36	78	55
Humanities. . .	32	53	+66	119**	47
Cannot say. . .	42	0	--	--	--
All arts and sciences . .	160	151		72	52

Note.--All percentages based on freshman survey N for college or arts and sciences curricular group.

*Percentage differs significantly from all in this status at .05 level.

**Percentage differs significantly from all in this status at .01 level.

are reported in terms of net change and the proportions who entered and were stable within each college at the time of the senior survey. Thus the number in Agriculture increased 57 per cent, the number who had entered represented 68 per cent of the freshman total, and the number who were in Agriculture during both surveys was 89 per cent of the freshman total. There were marked increases in the colleges of Agriculture and Business Administration and a decline in Engineering. The colleges did not differ from one another significantly in stability--about 8 out of every 10 students remained in the same college over the three-year period; but significantly more transfers were attracted to Agriculture and to Business Administration and fewer to Education and Engineering.

At the time of freshman registration first-year students in Arts and Sciences were asked "so far as you can tell now, which of 34 major fields will you choose . . . at the end of the sophomore year?" The major fields were classified after the survey into curricular groups of natural science, social sciences and humanities. Although these groupings did not differ in stability, a significantly smaller proportion entered science and a larger proportion entered humanities.

Educational Specialization

In 1960 the entering freshmen were asked to choose among 67 majors or curricula the one which they preferred at that time; in 1963 as shown in Table 4, 48 per cent were in the educational specialization of their freshman choice.[1] Males were significantly less stable than females. When analyzed by freshman colleges, among the males the smallest proportion was stable within Agriculture and the largest within Education; among the females (disregarding two girls who started in Engineering) the smallest proportion was stable within Arts and Sciences and the largest within Nursing.

Significantly more men than women entered their senior specialization after the first survey. Curricula in Agriculture and Business Administration attracted proportionately more new entrants; of all specializations those in Nursing and Education were least likely to attract new entrants.

In Table 5 all educational specializations with 10 or more students in either the freshman or senior surveys are listed in order of stability. Nursing, home economics, education, and elementary education were the most stable and chemistry, English, banking and finance, and sociology least stable. The largest

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[1] By this time there were 75 available specializations. Four had been dropped and 12 added; thus there were 63 majors or curricula which were presented to the students in both surveys.

TABLE 4

STABILITY IN CURRICULUM OR MAJOR BY COLLEGE AND BY SEX

College	Available curriculum 1963 N	Freshman survey N	Senior survey N	Net change %	Status on senior survey Entered %	Stable %
Agriculture	15	6	11	+83	167	0
		13	19*	+46	77	69
Engineering	4	67	53	-21	55	45
		2	1	-50	50	0
Business administration	15	32	50	+56	122**	34
		10	16	+50	110*	50
Education	3	19	21	+11	42*	68
		179	167	-67	29**	65**
Nursing	3	--	--	--	--	--
		32	31	- 3	16**	81**
Arts and sciences	35	82	71	-13	63	23**
		78	80	+ 3	85**	18**
All colleges.	75	206	206		67**	34**
		314	314		46	54
All.	75	520	520		52	48

Note.--Data for males are shown in first row, for females in second row. All percentages based on freshman survey N for college.

*Percentage differs significantly from all in this status at .05 level.

**Percentage differs significantly from all in this status at .01 level.

TABLE 5

STABILITY IN SELECTED CURRICULUM OR MAJOR AMONG UNIVERSITY STUDENTS

Curriculum or major	Freshman survey N	Senior survey N	Net change %	Status on senior survey	
				entered %	stable %
Nursing	25	25	--	12**	88**
Home economics education . . .	8	13	+63	75	88
Elementary education . . .	91	99	+ 9	30**	79**
Accounting. . . .	15	30	+100	140**	67
Civil engineering	20	23	+15	50	65
Secondary education . . .	91	89	- 2	35**	63
Mathematics . . .	5	10	+100	140**	60
Mechanical engineering . .	9	12	+33	78	56
Psychology. . . .	16	19	+69	69	50
Electrical engineering . .	29	18	-38	21*	41
Chemistry	16	8	-50	13*	38
English	3	10	+70	300**	33
Banking and finance	7	10	+30	129**	14
Sociology	6	16	+167	267**	--
All curricula (74)	520	520		52	48

Note.--All percentages based on freshman survey N for curriculum or major

*Percentage differs significantly from all in this status at .05 level.

**Percentage differs significantly from all in this status at .01 level.

proportions entered English and sociology; nursing, chemistry, and electrical engineering attracted the fewest proportions of new entrants.

Occupational Goal

The freshmen were presented a list of 71 occupational titles quite similar to the list used in the public school studies (Dole, 1961) and asked, "What do you hope eventually to be?" As seniors the constant students responded to the same list[1] and question; in addition, they were asked to "write the number of the occupation . . . which you hoped to be (so far as you can recall) when you entered college as a freshman?" It was thus possible to measure both stability and accuracy in respect to occupational goal. Of the 520 freshmen 63 per cent indicated the same occupational goal in the senior survey and 71 per cent recalled accurately their original choice (Table 6). The males were less stable than the females but equally accurate. Students who entered in Arts and Sciences and Business Administration were more likely to change their occupational preferences, and those who started in Education, especially girls, were most stable.

In Table 7 the eight most popular goals are compared for stability and for accuracy of recall. Teacher was the most stable title and chemist the least. Those who had indicated nurse on first inventory recalled this preference most accurately whereas those who checked "cannot say at this time" were least likely to recall this response accurately.

A separate analysis was made of the 64 males and 88 females who changed occupational goals from the freshman to senior surveys. Of the men 44 per cent and of the women 32 per cent indicated on the senior survey, inaccurately, that when they entered college they had held their present occupational goal.

Results of Determinant Item Analyses

Most Popular Reasons

The responses of the 206 constant males and 314 constant females to Reasons for Going to College in the freshman survey and again in the senior survey are summarized by item in Table 8. By consulting the left hand columns it is possible for each item to compare the proportion of male and female freshmen indicating of

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[1] Four options were added to the senior list: officer armed forces; singer, dancer; rancher; and repairman.

TABLE 6

STABILITY AND ACCURACY OF RECALL IN OCCUPATIONAL GOAL BY FRESHMAN COLLEGE AND SEX

Freshman college	Freshman survey	Senior survey	
	N	Stable %	Accuracy of recall %
Agriculture	6[a]	17	17
	13	54	62
Engineering	67	69	91
	2	0	100
Business administration	32	41	53
	10	30	30
Education	19	68	68
	179	90**	81
Nursing	--	--	--
	32	84	97
Arts and sciences	82	36**	60
	78	38**	47
All colleges	206	49*	68
	314	73	72
All	520	63	71

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[a] Data for males are shown in first row, females in second row for each college.

*Percentage differs significantly from all in this status at .05 level.

**Percentage differs significantly from all in this status at .01 level.

TABLE 7

STABILITY AND ACCURACY OF RECALL IN SELECTED OCCUPATIONAL GOALS AMONG UNIVERSITY STUDENTS

Occupational goal	Freshman survey N	Senior survey N	Net change %	Status on senior survey entered %	stable %	accuracy of recall %
Teacher	195	220	+13	25**	91**	85
Nurse	27	23	-15	0	85	96
Engineer	67	50	25	6**	69	96
Accountant	15	27	+30	113**	67	87
Lawyer	8	11	+38	75	63	75
Cannot say	49	41	-16	35	49	33
Doctor	17	7	-71	12	29	77
Chemist	14	5	-79	14	21	64
All 71 goals	520	520		38	63	71

Note.--All percentages based on freshman survey N for goal.

*Percentage differs from all in this status at .05 level.

**Percentage differs from all in this status at .01 level.

TABLE 8

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

("Some of the reasons students give for going to college are listed below. [So far as you can remember how you felt as a freshman] please show the degree of importance each of the reasons had in influencing your decision to attend college . . .")

Reason	Freshman survey			Senior survey			Relationships				
	%			%					Stability		
	g.imp.	M	SD	g.imp.	M	SD	r	X^2	3	0-2	Total
General											
1. I feel (felt) that a college degree is (was) necessary for the kind of work I want to do . .	88	2.81	0.57	83	2.76	0.61	22	29.79	88	24	80
	89**	2.84	0.51	82	2.74	0.63	23	20.32	85	24	79

(Table continued next page)

Note.--Modifications in senior form are shown in parentheses. Underlined phrases were omitted from senior survey. Responses of 206 males are represented in first line after each item; 314 females in second line. Decimals omitted from r, percentages and indices.

*Percentage is significantly higher than in corresponding survey at 95 per cent level of confidence.

**Percentage is significantly higher than in corresponding survey at 99 per cent level of confidence.

+(Chi square does not differ significantly from no relationship, $P < .05$).

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey			Senior survey			Relationships				
									Stability		
	% g.imp.	M	SD	% g.imp.	M	SD	r	X^2	3	0-2	Total
2. Business, church or other community leaders encouraged me to go to college	17	0.75	0.97	9	.94	1.01	36	35.53	27	48	48
	7	0.83	1.00	7	0.96	0.96	29	35.37	17	45	43
3. My teachers thought I was good college material .	13	1.40	0.98	12	1.49	0.90	27	45.32	46	36	37
	22	1.62	1.04	29**	1.90	0.93	40	59.66	56	34	39
4. I hope(d) to make many new friends in college.	27**	1.65	1.12	10	1.11	.98	34	30.78	17	40	34
	29**	1.89	0.92	11	1.35	0.95	30	42.17	22	40	35
5. It has (had) always been expected that I would go to college	30	1.64	1.12	30	1.76	1.08	32	41.08	52	27	34
	42	1.99	1.08	52**	2.23	0.96	46	82.62	74	30	49
6. The persons I respect(ed) most in my community have (had) gone to college	12**	0.85	1.07	7	0.77	0.98	27+	20.97	8	50	45
	12	0.98	1.05	13	1.15	1.05	43	73.36	46	43	43
7. I have (had) serious intellectual curiosities which only college can (could) satisfy	22**	1.52	1.08	14	1.32	1.03	29	27.59	31	35	34
	19	1.53	1.02	15	1.50	0.97	45	75.55	37	44	43
8. I want(ed) to learn how to get along with other people.	20**	1.50	1.04	7	0.99	0.96	36	45.80	22	41	37
	24**	1.67	1.03	5	1.09	0.91	23	25.72	09	37	31

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey			Senior survey			Relationships				
									Stability		
	% g.imp.	M	SD	% g.imp.	M	SD	r	X^2	3	0-2	total
9. I hope(d) to prepare myself to be a success in life .	82**	2.77	0.59	63	2.50	0.77	47	127.63	73	42	68
	24**	2.82	0.46	68	2.57	0.71	35	93.75	74	42	69
10. Most of my friends are (were) going to college .	8	0.91	0.98	12*	1.29	0.98	33	29.52	25	39	38
	5	1.00	0.89	17**	1.55	0.96	38	76.90	53	38	39
11. I think (thought) college life will (would) help me to develop socially. .	25**	1.74	0.98	12	1.27	0.93	42	40.59	25	38	35
	29**	1.86	0.92	18	1.37	0.85	36	57.91	11	40	34
12. I want(ed) the close fellowship of living in a dormitory.	1	0.25	0.61	1	0.20	0.56	37	65.84	33	81	80
	2	0.26	0.70	2	0.19	0.61	49	105.21	14	87	85
13. I want(ed) to explore several lines of work to see what I would be most interested in . .	19**	1.25	1.13	11	1.13	1.04	41	52.63	15	48	42
	19	1.25	1.13	15	1.07	1.11	43	77.99	38	48	46
14. I feel (felt) that I can (could) live an easier life if I have (had) a college education	38**	1.97	1.06	29	1.81	1.03	25	21.38+	44	34	38
	30	1.83	1.01	23	1.61	1.02	38	38.59	38	37	37
15. I want(ed) to find out more about certain fields of knowledge.	34**	1.97	0.94	25	1.70	1.03	31	44.15	51	33	39
	37**	2.05	0.93	30	1.89	0.96	39	65.53	49	43	45

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey % g.imp.	Freshman survey M	Freshman survey SD	Senior survey % g.imp.	Senior survey M	Senior survey SD	Relationships r	Relationships X^2	Relationships Stability 3	Relationships Stability 0-2	Relationships Total
16. I feel (felt) that college acquaintances and contacts will (would) prove advantageous in finding a position after graduation	26**	1.59	1.09	17	1.32	1.07	40	45.16	38	12	15
	20**	1.51	1.06	12	1.13	1.03	37	56.38	25	42	39
17. I think (thought) a college education will (would) enable me to be more influential in community affairs. . . .	23**	1.55	1.09	13	1.27	1.02	38	40.90	27	14	15
	17**	1.50	0.97	6	1.11	0.94	41	57.78	15	39	35
18. I think (thought) that college will (would) be a good place to meet the type of person I'd like to marry	12**	1.18	1.01	7	0.87	0.94	37	26.42	25	16	16
	10	1.23	0.98	8	1.04	0.96	40	75.98	32	43	42
19. I enjoy(ed) studying and want(ed) to continue academic work.	20	1.61	1.02	16	1.47	0.98	40	38.13	34	13	15
	24	1.89	0.88	29	1.90	0.93	39	59.25	51	43	45
20. There is (was) not much for me to do around home	4**	0.43	0.79	1	0.41	0.72	16+	19.80+	11	25	24
	2	0.25	0.62	2	0.33	0.68	14	15.66+	17	69	68

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey % g.imp.	Freshman survey M	Freshman survey SD	Senior survey % g.imp.	Senior survey M	Senior survey SD	Relationships r	Relationships X^2	Stability 3	Stability 0-2	Stability total
21. It will (would) increase the reputation of my family	7	0.83	0.97	9	1.05	1.00	34	35.98	40	16	17
	7	0.77	0.97	9	0.94	0.97	37	59.88	43	45	45
22. A college degree means (meant) a great deal to me.	66**	2.47	0.88	49	2.15	1.00	27	35.06	61	07	21
	64**	2.49	0.79	55	2.35	0.86	42	82.86	66	41	57
23. In my family young people have (had) always gone to college	6	0.49	0.89	4	0.50	0.86	40	54.17	23	26	26
	9	0.62	0.98	11	0.78	1.05	57	138.96	66	60	61
24. The decision to come to college was pretty much made for me . . .	21	1.11	1.18	17	1.04	1.14	21	23.42	26	15	15
	10	0.96	1.04	16	1.22	1.10	29	45.75	31	42	41
25. I feel (felt) that a college education would raise my station in life	49**	2.26	0.88	33	2.02	0.90	21+	17.19	38	10	15
	39**	2.04	0.97	39	1.82	0.99	41	65.98	48	41	43
26. I need(ed) a college degree to go on to graduate or professional school	50**	2.01	1.18	31	1.52	1.22	36	37.45	43	34	39
	48**	1.98	1.18	32	1.56	1.21	29	45.92	47	37	42
27. I hope(d) to acquire some qualifications for leadership in civic affairs.	14	1.36	1.03	13	1.13	1.03	41	53.44	46	33	35
	10**	1.19	0.97	4	0.93	0.88	34	55.71	13	45	42

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey			Senior survey			Relationships				
	%			%					Stability		
	g.imp.	M	SD	g.imp.	M	SD	r	X^2	3	0-2	Total
28. My parents insist(ed) on my going to college	14	1.00	1.10	10	1.03	1.03	41	52.96	29	53	50
	10	0.95	1.05	11	1.01	1.04	38	73.56	37	49	48
29. It's the sort of thing a girl like me is (was) expected to do these days.	--	0.08	0.36	1	0.12	0.48	06	20.64+	--	89	89
	9	0.82	0.82	20**	1.23	1.12	40	60.34	52	42	43
30. It's the sort of thing a fellow like me is (was) expected to do these days.	7	0.85	0.98	11	1.07	1.05	14	10.86+	29	38	37
	--	0.03	0.22	1	0.07	0.42	15	--+	--	95	95
Values											
1. Aptitude. I feel (felt) that I will (would) be able to do well in what I plan to study .	48*	2.37	0.70	41	2.17	0.87	25	75.92	51	37	44
	46**	2.36	0.68	35	2.19	0.73	28	80.14	47	52	50
2. Chance to serve others. It will (would) help me to be of greater service to people . .	34**	1.99	0.99	17	1.56	0.95	49	71.11	41	47	45
	60**	2.46	0.77	42	2.19	0.87	52	126.97	57	49	54

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey			Senior survey			Relationships				
									Stability		
	% g.imp.	M	SD	% g.imp.	M	SD	r	X^2	3	0-2	Total
3. Most practical thing to do. It will (would) be useful to me later .	52	2.25	0.94	48	2.23	0.88	24	24.00	55	31	44
	55	2.40	0.79	51	2.34	0.80	23	45.21	63	40	53
4. Preparation for specialization. I want(ed) to prepare myself for specialization in some field	66	2.50	0.83	61	2.36	0.93	32	31.68	68	29	55
	59	2.38	0.88	64*	2.49	0.80	26	34.64	74	23	53
5. Security of employment. I will (would) be sure of getting a job. . . .	50	2.27	0.89	48	2.22	0.91	33	27.37	62	29	46
	60	2.49	0.72	56	2.42	0.76	30	66.29	66	42	57
6. Potential income. It will (would) help me later to earn a high salary.	49	2.27	0.88	46	2.19	0.90	44	50.22	60	39	49
	34	2.08	0.84	34	2.08	0.83	36	57.72	52	44	47
7. Independence. It will (would) help me to stand on my own two feet and do things for myself and by myself. .	54**	2.32	0.91	43	2.04	1.04	31	25.50	55	30	44
	56*	2.38	0.84	49	2.25	0.89	31	41.54	59	33	48

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey % g.imp.	Freshman survey M	Freshman survey SD	Senior survey % g.imp.	Senior survey M	Senior survey SD	Relationships r	Relationships X^2	Relationships Stability 3	Relationships Stability 0-2	Relationships Stability Total
8. Opportunity for advancement. It will (would) help me to get a good job in which I can get ahead in life	62**	2.43	0.87	38	2.26	0.88	38	35.43	61	38	52
	47**	2.27	0.80	38	2.11	0.86	37	58.15	53	41	46
9. Easiest thing to do. What I plan(ned) to study is (was) not hard for me to accomplish.	4	0.71	0.87	5	0.82	0.91	33	33.82	11	50	49
	3	0.56	0.82	3	0.80	0.84	22	19.98+	10	43	42
10. Prestige. I will (would) stand high among those who know me and I will (would) be respected for what I study.	18	1.36	1.05	16	1.40	1.00	43	50.70	45	39	40
	9	1.25	0.91	15**	1.51	0.93	30	36.17	30	39	38
11. Satisfaction from field. I am (was) interested in the kind of thing I plan(ned) to study and enjoy it	59**	2.41	0.83	47	2.23	0.88	32	74.64	55	33	46
	78**	2.71	0.63	69	2.57	0.74	40	87.03	77	35	68
12. Self-improvement. I can (could) help myself become a better person.	57**	2.36	0.88	40	2.06	0.95	43	46.77	54	43	49
	67**	2.54	0.75	55	2.41	0.75	33	86.34	65	41	57

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey			Senior survey			Relationships				
									Stability		
	% g.imp.	M	SD	% g.imp.	M	SD	r	X^2	3	0-2	Total
13. Parenthood. It will (would) help me to be a better mother or father someday	27**	1.68	1.08	16	1.35	1.05	37	47.88	34	44	41
	44**	2.10	1.00	38	1.93	1.06	49	88.61	54	39	45
14. Religion. It will (would) give me the chance to develop my religious values . . .	8*	1.03	0.99	5	0.64	0.89	41	48.39	29	49	47
	20**	1.41	1.11	6	0.87	0.95	40	67.57	19	41	37
Influences											
1. Hobby things like building model airplanes or collecting records . .	13	0.85	1.08	11	0.81	1.06	47	51.08	38	20	21
	6	0.59	0.91	6	0.52	0.89	35	72.78	33	61	63
2. Free time activities things like the "Y," church, 4-H, or just the things I do (did) outside of school when I have (had) free time. .	13**	1.11	1.03	8	0.83	0.99	46	65.82	26	20	20
	15	1.33	1.04	13	1.18	1.06	34	59.96	40	38	38
3. High school teacher any high school instructor I have had . (College professor.).	22	1.66	1.00	22	1.50	1.08	31	32.51	41	11	14
	30	1.78	1.05	30	1.82	1.02	39	68.49	49	37	41

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey			Senior survey			Relationships				
	%			%					Stability		
	g.imp.	M	SD	g.imp.	M	SD	r	X^2	3	0-2	Total
4. Parents. My mother and father	33**	1.95	0.96	26	1.70	1.04	40	48.31	42	11	15
	41	2.09	0.95	37	2.02	0.96	32	52.61	55	40	46
5. High school courses. What I have (had) learned in my classes at school	48**	2.21	0.93	27	1.77	0.99	23	18.35+	36	08	13
	44**	2.24	0.81	32	2.04	0.87	38	64.56	49	32	46
6. Work experience. I have (had) had some experience with the kind of thing I plan(ned) to study	14	1.03	1.07	10	0.91	1.02	28	26.12	25	17	17
	22	1.34	1.18	24	1.42	1.17	37	62.74	50	37	40
7. Friends. Talking things over with my friends	17*	1.49	1.00	14	1.34	1.01	32	25.31	26	14	15
	26	1.75	0.99	24	1.75	0.96	28	31.90	37	37	37
8. Relatives. Talking to my aunts, uncles, cousins, brother or sister	18**	1.22	1.13	10	1.06	1.01	45	57.13	24	19	18
	21**	1.43	1.10	16	1.33	1.04	41	73.14	36	45	43
9. University counselor. I talked with a college counselor about my plans	3	0.34	0.74	4	0.53	0.85	25	25.04	29	05	05
	3	0.33	0.76	4	0.54	0.84	22	46.74	33	64	63
10. High school counselor. I have talked with my school counselor about my plans	15**	1.11	1.13	7	0.83	0.96	36	35.34	19	17	17
	16*	1.08	1.15	11	0.97	1.05	56	121.41	40	51	49

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey			Senior survey			Relationships				
	%			%					Stability		
	g.imp.	M	SD	g.imp.	M	SD	r	X^2	3	0-2	Total
11. Aptitude and interest test. Tests I have (had) taken to find out what I am good at doing and what I like(d) to	31**	1.83	1.04	22	1.58	1.05	21	20.89+	32	37	35
do best	36**	1.96	0.99	23	1.78	0.96	41	63.03	38	41	44
12. Random choice. First thing I thought of. I did not think about future plans after high school until now (until	3	0.32	0.71	4	0.62	0.88	25	33.69	14	64	62
I had to make a decision)	2	0.16	0.54	6**	0.46	0.88	18	18.26+	17	71	70
13. Career day program. The kind of program we had in high school which was about career and college	9*	0.86	1.01	5	0.75	0.91	38	35.31	17	47	44
possibilities	9	0.96	1.03	8	0.82	0.99	34	44.00	23	46	44
14. Movies and TV. I have (had) seen on TV and in the movies the kind of thing I plan(ned) to	7*	0.68	0.93	3	0.62	0.85	51	61.41	21	57	55
study	4	0.68	0.89	4	0.60	0.81	25	41.02	14	55	54

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey % g.imp.	Freshman survey M	Freshman survey SD	Senior survey % g.imp.	Senior survey M	Senior survey SD	Relationships r	Relationships X^2	Stability 3	Stability 0-2	Stability Total
15. People in the field. I have (had) talked to people who are doing the kind of thing I plan(ned) to study . .	23*	1.39	1.16	17	1.32	1.07	46	66.39	46	44	44
	39**	1.95	1.06	26	1.68	1.09	39	73.57	44	46	45
16. ROTC. The training I received in my high school ROTC programs .	1	0.30	0.69	4**	0.32	0.72	36	66.80	67	72	72
	--	0.02	0.15	1**	0.06	0.38	-01	--+	--	96	96
17. Reading. What I have (had) learned about college from books and magazines	20	1.53	1.02	17	1.42	1.03	36	34.33	32	38	37
	23*	1.67	1.01	18	1.60	1.00	38	64.58	38	42	41
18. High school principal. He encouraged me to go to college	2	0.38	0.72	1	0.32	0.68	23	26.79	20	68	67
	5**	0.30	--	1	0.25	--	44	87.51	14	81	78
Interests--work with:											
1. Words, such as writing, reading, speaking, etc.	21*	1.57	1.03	15	1.21	1.07	47	53.34	37	39	38
	28	1.90	0.92	28	1.77	1.03	37	63.09	54	37	42
2. Ideas, such as planning, analyzing, thinking about things, etc. . .	52**	2.30	0.89	39	2.00	1.03	40	45.82	57	43	51
	46*	2.26	0.82	38	2.10	0.91	29	49.17	58	39	48

(Table continued next page)

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TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

Reason	Freshman survey			Senior survey			Relationships				
									Stability		
	% g.imp.	M	SD	% g.imp.	M	SD	r	X^2	3	0-2	Total
3. Food, such as cooking, baking, etc.	1	0.20	0.55	1	0.28	0.67	15	35.70	33	77	77
	4	0.42	0.80	5	0.38	0.78	51	253.22	62	69	69
4. Machines, such as cars, appliances, calculators etc.	18	1.26	1.10	16	1.08	1.13	46	77.35	54	47	49
	1	0.24	0.57	1	0.26	0.60	31	63.53	--	77	76
5. Numbers, such as figuring, arithmetic, etc.	39**	1.93	1.10	30	1.67	1.13	46	63.87	49	43	46
	17	1.26	1.11	15	1.27	1.08	57	145.76	54	50	51
6. Adults, such as directing or helping adults, selling things to them or being a leader for them	13	1.13	1.06	12	1.04	1.06	37	57.23	50	44	45
	12	1.18	1.02	17*	1.29	1.07	27	47.22	42	40	40
7. Music, such as playing the piano, dancing, singing, etc.	6	0.57	0.87	6	0.51	0.88	41	45.30	39	58	57
	10	0.79	1.01	10	0.90	1.05	59	137.88	53	56	56
8. Children and youth, such as teaching little children, playing with them and taking care of them	7	0.72	0.96	10*	0.67	1.02	48	67.72	64	55	56
	53*	2.13	1.11	47	1.96	1.19	63	154.38	71	42	58
9. Science, such as studying about living things, the heavenly bodies, etc.	39*	1.86	1.13	32	1.72	1.15	52	67.20	57	40	47
	19	1.37	1.09	23	1.48	1.12	50	105.16	59	44	47

(Table continued next page)

TABLE 8 (Cont'd)

REASONS FOR GOING TO COLLEGE OFFERED IN FRESHMAN AND SENIOR SURVEYS

	Freshman survey			Senior survey			Relationships				
									Stability		
	% g.imp.	M	SD	% g.imp.	M	SD	r	X^2	3	0-2	Total
10. Plants and animals, such as farming and growing things	12	0.93	1.05	12	0.79	1.05	46	49.92	25	51	50
	5	0.67	.88	9**	0.89	1.01	40	73.33	53	47	47
11. Art, such as drawing, painting, etc.	9*	0.82	0.99	5	0.64	0.92	49	61.16	28	57	55
	7*	0.86	0.98	11*	1.01	1.05	45	96.04	50	49	49
12. Recreation, such as parties, athletics, goodtimes, etc. . . .	10	1.27	0.98	9	0.88	0.99	36	51.56	38	45	45
	14**	1.28	1.02	7	1.06	0.96	34	45.24	19	44	41
13. Travel, such as visiting now places and meeting new people . .	18*	1.32	1.10	13	0.92	1.09	22	19.07+	29	38	37
	32*	1.69	1.15	26	1.51	1.17	26	35.87	43	35	38

great importance, the freshman mean and standard deviation on the degree of importance scale (0-3) with the proportion of the same group as seniors indicating of great importance, the senior mean and standard deviation. It is also possible to compare items in popularity within the freshman and senior surveys.

The most popular items in both surveys for the two sexes measured by per cent of great importance and mean degree of importance were degree necessary for work, hoped to prepare to be a success in life, satisfaction from field, preparation for specialization and college degree meant a great deal. In addition, aptitude and opportunity for advancement were ranked among the top ten in of great importance by the male group both as freshman and as seniors, and these two items were rated on the average of more than moderate importance (over 2.00). In contrast, self-improvement, security of employment, most practical thing to do, and independence were stressed by the females.

When the 21 female items with averages of moderate importance or more (2.00 or over) in either or both testings were inspected for largest rank order change, "It had always been expected that I would go to college" rose from 21st in the freshman survey to 10th in the senior survey; the chance to serve others dropped from 7th in 1960 to a tie for 11th ranking in 1963. Of the 16 male items with averages of moderate importance or more (2.00 or over) the most practical thing to do increased from 14th to 5th in popularity and a college degree meant a great deal declined from 4th to 10th.

Changes in Importance

If it can be assumed that the meanings of each item and of the degree of importance scale were constant over the three-year period, it may be defensible to compare items with one another in terms of the extent of net change in importance.

Over the undergraduate college experience 8 male item means and 20 female item means were 0.10 or more higher in the senior year than in the freshman year, increases which were statistically significant when t tests for the difference between correlated means were applied.[1] The largest increase both for the men (+0.38) and for the women (+0.55) was on "most of my friends were going to college," followed by "business, church, or other community leaders encouraged me to go to college" (men +0.19 and women +0.26) and "it would increase the reputation of my family" (men +0.22 and women +0.22). On the item "it was the sort of thing a fellow like me was expected to do" the increase for males was 0.22; and the companion item "it was the sort of thing a girl like me was expected to do" rose 0.41.

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[1] Results of t tests are not included in Table 8. However, because of the large N's most differences were significant at the .05 level.

The female respondents also increased 0.20 or more on "it had always been expected that I would go to college" (+0.21); "my teachers thought I was good college material" (+0.28) and "the decision to come to college was pretty much made for me" (+0.26).

Within the male constant college students 46 item means dropped 0.10 or more from freshman to senior year and within the females 36 item means. On three items both men and women dropped over half a scale point: influence of religion (males -0.61; females -0.54), need for a college degree to go on to graduate or professional school (males -0.51; females -0.58); and "I wanted to learn how to get along with other people" (males -0.56; females -0.58). Other items on which both men's and women's means were 0.20 or lower on the second survey included "I hoped to make many new friends in college" (males -0.44; females -0.46); "chance to serve others" (males -0.38; females -0.27); interest in "recreation" (males -0.47; females -0.22) and influence of "high school courses" (males -0.44; females -0.20). For the men especially an interest in travel declined (-0.40) and for the women "I thought a college education would enable me to be more influential in community affairs" (-0.39).

Extent of Relationship

In the right hand columns of Table 8 the data describing extent of the relationship between responses to an item on the freshman survey and responses to that item on the senior survey are reported. For example, for the item on the necessity for a college degree in the male group the product-moment correlation between degree of importance in 1960 and 1963 was .22, chi square applied to the 4 x 4 contingency table of 1960 versus 1963 options was 29.79; 88 per cent of those who indicated option 3 ("of great importance") as freshman responded similarly as seniors; 24 per cent of those who responded 0-2 (no, slight, or moderate importance) responded 0-2 again; and stability of all options was 80.

When the extent of the relationship was measured by the product-moment correlation between 1960 and 1963 ratings, r's exceeded .20 in all but three items for the males and one for the females. Except in these instances chi square differed significantly from no relationship. The highest relationships, in which correlations in both male and female samples exceeded .45, were found on four interest items, science, children and youth, art and numbers, and one value item, chance to serve others. Within the male group test-retest correlations were also above .45 on influence of movies and TV, hobby and free time activity and interest in words and machines; and within the female group "in my family young people had always gone to college," influence of high school counselor and interest in food and in music.

In total stability the women constant college students were 30 per cent or above on all items; in contrast, the men were below 30 per cent on 19 items. The most stable items for both sex groups were college degree necessary for work, "I hoped to prepare myself to be a success in life," value of specialization, and interest in music, and children and youth.[1]

When agreement only on the "of great importance" level of the scale is considered, the items concerning degree necessary for work, success, specialization, and children and youth exceeded 50 per cent stability for both males and females. In addition, "a college degree means (meant) a great deal to me"; most practical thing to do, security of employment, potential income, satisfaction, and science showed substantial stability.

Changes in Determinant Classifications

The four a priori determinant classifications (Reasons, Influence, Values, and Interests) were also compared on various measures in the extent of change between freshman and senior surveys, treating males and females separately (Table 9). When the items were ranked by 1960 means within each determinant classification and correlated with rank order of 1964 means, all coefficients obtained except that for female reasons differed significantly from no relationship. The influence items were highly correlated for both males and females.

Applying Fisher's z transformation, the mean of test-retest item correlations was calculated for males and females within each determinant classification. All coefficients were low but differed significantly from .00. The interest correlations were slightly higher than the other determinant classifications.

The influence items were lowest in per cent agreement for all levels of response to the degree of importance scale as well as for "of great importance" considered separately. To obtain a

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[1] For the men "It was (is) the sort of thing a girl like me was expected to do (these days)" elicited 95 per cent agreement between surveys; for the women on the companion item, ". . . fellow like me . . .," stability was 89 per cent. Responses to these items were used as one of the bases for identifying suspected uncooperative subjects. After each survey the protocol of each male answering option 1, 2, or 3 was carefully inspected for pattern marking or for other obvious iter-item discrepancies and discarded if there seemed sufficient evidence of incongruence. Similar auditing procedures were applied to the females on the basis of their responses to the companion item ("a fellow like me"). The high stability of these two items is therefore in part an artifact of the auditing procedures.

TABLE 9

STABILITY MEASURES SUMMARIZED BY DETERMINANT CLASSIFICATIONS

Measure	Reasons N = 28		Influences N = 14		Values N = 14		Interests N = 12	
Rank order correlation of freshman with senior means								
Males	.86		.98		.85		.88	
Females	.35[a]		.97		.91		.97	
Mean of correlations[b]								
Males	.33		.37		.35		.43	
Females	.36		.37		.34		.42	
Per cent agreement for all responses								
Males	36		26		46		48	
Females	47		45		50		49	
Per cent agreement for "of great importance"								
Males	47		33		55		48	
Females	52		43		60		55	
Mean of means	F[c]	S	F	S	F	S	F	S
Males	1.47	1.34	1.35	1.17	1.99	1.82	1.31	1.09
Females	1.51	1.43	1.49	1.40	2.10	2.01	1.30	1.29

Note.--Figures based on item analyses of Reasons for Going to College. Items with means below .50 omitted from these analyses.

[a] $P < .05$.

[b] Fisher's z transformation applied to product-moment correlations.

[c] F = freshman survey, S = senior survey.

summary of per cent agreement by classification on the "of great importance" level the total number of agreements was divided by the total number checking point 3 on the freshman survey. More than half of males and females who ranked value reasons "of great importance" as freshman responded similarly as seniors.

Finally, grand means within each classification were computed for the freshman and senior surveys. In both surveys and for both sexes the value means were highest and interest means lowest in degree of importance. When changes in means from freshman to senior survey were examined, in all instances the male means dropped significantly; the senior female grand means were also slightly lower than freshman grand means in each determinant classification but by no more than .09.

Stability of Item Forms

Sources of Variability

In the most general sense items relating to personal-social characteristics changed least in these college students over a three-year period, followed by educational and occupational plans, motivations and recollected reasons for entering college.

Comparing only the items cast in retrospective form, it was seen that factual personal-social data ranged from 73 to 100 per cent in stability, occupational goals averaged 71 per cent, and attitudes and determinant classifications ranged from 26 to 56 per cent. Before considering some of the possible sources of variability it must first be realized that there were not one but several different kinds of change occurring which required different measures. It would have been theoretically possible, for example, on test-retest for all individuals to shift their responses and yet for the group to distribute itself in like fashion among options on each appraisal. When, as in the preceding section, group means were calculated within determinant classifications, different item responses on the freshman and senior surveys could have been added to obtain comparable totals.

Seven sources of variability will be considered as they may have contributed to the different measures of change in this research.

1. Conditions of survey administration. It is assumed that auditing procedures during the collection of questionnaires and the later discard of suspected spoiled questionnaires reduced this potential source to a minimum. The assumption is supported by the very high stability on personal data items (date of high school graduation) when subject memory, true response, and true change were known to be invariant.

2. Instrument. Presumably pretesting procedures eliminated gross difficulties for respondents in reading items accurately and understanding what was expected. However, some subjects probably misread the retrospective items, as, for example, a number of those who listed their freshman occupational goal inaccurately on the senior survey.

3. Subject cooperation. Resistance to the survey was inferred from observation during data collection and from selected depth interviews to have had minimal effect on the first administration. Because the second administration required more time and attention and some seniors were "survey wise," lack of subject cooperation probably contributed to variability. However, inspection of items permitted the discard of about seven per cent of the sample who were suspected malingerers.

4. Subject memory. Accuracy was tested on the recalled freshman occupational goal item in the senior survey (29 per cent disagreed with themselves). It is estimated that incorrect retrospections accounted for approximately 60 per cent of discrepancies, allowing 40 per cent for instrument, subject cooperation and administration.

5. True response appropriate at time of second inventory but inappropriate at time of first inventory. It is estimated that confounding past with present may account for about one-third of change in retrospective items, since 37 per cent with unstable goals reported their present occupational aspiration as also their freshman goal. This phenomenon might be interpreted as a leveling process in memory, a denial of change as inconsistent with self-concept or perhaps a reduction of cognitive dissonance. "I can't imagine ever having considered anything but sociology as a field." As suggested in paragraph 2 an instrument effect may also be responsible for such a response in some subjects.

6. Irrelevant psychological variables. Such well-known influences upon measurement in self-respect as social desirability, resistance to self-disclosure, and response sets presumably contributed to change if they varied from freshman to senior surveys. Auditing eliminated a number of subjects who may have been showing response sets. Other irrelevant psychological variables were not controlled in this research.

7. True change. If all other sources of variability are discounted, the remaining change in responding to an item is assumed to reflect true change in the subject relevant to the content of the item. In this research, there was, of course, no true change between surveys in the invariant personal data items (national-ethnic background) and the retrospective items. A possible way to estimate the extent of true change in longitudinal studies would be to substract the variability from administration, instrument, and subject

cooperation as inferred from the response to invariant personal characteristics items or to "lie" scales. It is contended that retrospective items which are susceptible to distortion from inaccurate subject memory or response which confuses past with present should be avoided.

Why did certain items increase markedly in popularity and others decrease? The answer may lie in differences in these sources of variability. For example, influence items may be more susceptible to differential memory effects. As high school persons and experiences drop further into the past and are not reinforced so frequently, their recalled potency fades. By their final year in college more seniors may have been willing to disclose reasons which were socially undesirable to freshmen.

Use of Retrospective Questions

The data raise serious questions about the validity of the retrospective question form in measuring motivation. Just as cross-sectional data may have to be substituted for longitudinal data when follow-up studies have not been conducted; so the retrospective question is possibly better than nothing when measures were not taken in the past. Perhaps when such questions must be used, responses should be adjusted to allow for sources of variability. These results also strongly reinforce the caveats of Quinn McNemar (1946) almost twenty years ago about the use of single items in measuring attitudes.

It has been shown that different kinds of items, as well as options within items, varied considerably in stability, substantiating the findings of Weiss, Dawis, England and Lofquist (1961) in their validation of employment histories. Thus, when confirmation is possible and their use is deliberate, retrospective questions can probably be applied fruitfully to various problems especially in measurement, personality, and social psychology. It has been suggested in this discussion that differences among college students in the accurate recollection of attitudes, occupational aspirations, and motivations for college were probably lawful. The systematic definition of principles underlying such differences might be valuable.

Stability of Plans

For this population of public university students approximately 8 out of 10 stayed within the same college, 6 out of 10 maintained the same occupational goal and 5 out of 10 held to the same educational specialization from freshman to senior year. Once they entered the University of Hawaii, relatively few students transferred into the colleges of Education, Engineering or Nursing, changed curricula in these colleges, or revised their occupational plans. Is it socially desirable, as appears to be happening, to encourage early vocational commitment and to discourage late entrants? The current structure of higher education and the expectations of the culture may be inconsistent with the facts of occupational immaturity and instability. If an educational specialization (as is especially true in the physical sciences) does not permit relatively easy entry, the price for the field in question seems clearly to be a loss of talent.

As an example of the point, Nichols (1964) has reported that in general the interest of able students in physical sciences and engineering has been decreasing in recent years. However, results of the present research suggest that scientific educational specializations (which included large numbers of pre-professional students) were comparable to other areas in stability but not in attractiveness. Engineering, Agriculture, Nursing, and the science fields within Arts and Sciences lost students in about equal proportions to other fields but fewer new students entered. The burden of specialized requirements (Bureau of Social Science Research, 1963) may represent a delay in educational progress to the potential qualified transfer which is longer than he is willing to endure.

Stability of Reported Determinants

Why College?

The findings in this longitudinal study were generally consistent with various previous comparisons by single determinant items of unmatched freshman and senior samples in Hawaii (Dole and Sherman, 1964b). For the Reasons items, the findings were also consistent with Iffert (1957) in respect to most popular present and recalled motivations for attending college offered by a national sample of public university seniors and former students. The group as a whole as freshman and as seniors stressed vocational preparation, success and intrinsic satisfaction. Males emphasized advancement and females values of economic security, self-improvement, independence and practicality probably as a function of perceived differences in sex role in the American culture (Dole, 1964b).

Changes in Importance

Some of the sources of variability discussed in a preceding section may account for the most striking shifts in response to individual determinant items. Why were the subjects more likely at the end than the beginning of college to support such reasons for going to college as "it has always been expected," "most of my friends were going," community leaders encouraged, family reputation, and decision "made for me"? Perhaps social desirability effects diminished with time or perhaps many seniors distorted their memory of past motivations to fit current self-concepts of increased awareness, actualization and autonomy.

Consider, on the other hand, some of those items which declined in importance in retrospect: Influence of religion, getting along with others, new friends, chance to serve others and recreation. Did many of the seniors diminish in social service attitudes? Apparently also some sources of variability were associated with sex status; men rated more items lower on the second inventory than did the women.

Extent of Relationship

For most items the product-moment correlations between degree of importance in 1960 and recalled degree of importance in 1963 were low but significant, ranging from .30 to .50. In reviewing longitudinal studies of self-report scales, Bloom (1964) has suggested that differences in subject motivation to answer honestly over two different points in time may mask stability that may really be present. Consistent with Bloom's review, interest items in this research tended to correlate higher on retest than value items. Even allowing for differences in design between this research and typical investigations of change, it may be that interest items are less susceptible than other item classifications to irrelevant psychological variables.

When all options within determinants were tested for stability, the highest agreement was found in vocational preparation, success and specialization, which were also among the most popular items. These same items were also high in stability when the highest scale step, "of great importance," was treated separately. However, if the four determinant classifications were compared, only within value items was there a tendency for greater agreement at the top of the degree of importance scale than at the lower steps.

The generally high correlations (except for female Reasons) between freshman and senior ranked means within classifications illustrates the point that some characteristics of relationship may be stable while others change. Thus, males as a group ranked influences in almost identical order on both surveys although mean importance dropped more than 0.20 of a point; on the other hand, males as individuals showed little predictability or agreement. Possibly forgetting reduced the importance of all influences as perceived by the seniors.

Women were markedly more in agreement with themselves than men in reported reasons and influences among all points of the degree of importance scale and in influences among "of great importance" options considered separately. However, when rank order correlations were compared, females were more stable only on values and interests. (These differences were not statistically significant, of course.) Some constant source of variation (acquiescent response set in females?) had a differential effect on the sexes presumably.

All of the findings considered in this section are difficult to interpret because of uncontrolled sources of variability and statistical artifacts. They do illustrate that stability has a variety of aspects.

Implications

College counselor and other student personnel workers deal frequently with material resembling the data of this research. When young people recall the determinants of their plans, the findings suggest that many of them will be inaccurate. An overreliance on client statements about past motivations becomes questionable. It would seem preferable for those who deal professionally with college students to consider such statements as tentative, inexact and subject to variation. Furthermore, consider the present findings from the vantage point of the entering student. By his senior year the chances are high that he will change some of the important reasons which he offers for coming to college. Perhaps a frontal attack on anticipated change is in order, with the specialist deliberately laying the groundwork. The freshman could be prepared for the possibility that he may modify his attitudes and encouraged to test new ways of viewing higher education.

For many years counselors have tended to rely heavily on vocational interest inventories. Although a number of critics (Dressel, 1954; Rothney, 1959) are consistent with the view that standardized inventories might convey a spurious impression of constancy, Strong (1943) and Kuder (1939) have maintained that the scales measured by their instruments were stable. The present research (even though concerned with recalled educational interests) supports the point that interest scales are more stable than single items and that groups are more stable than are individuals in responding to interest measures. When counseling involves one client making one decision, it would seem logical to apply those measures which appraise the individual aspects of interest. The use of procedures developed on groups is appropriate in planning decisions about groups.

Once the possibility of change is accepted by a student personnel specialist and, hopefully, by a student, consideration should be given not only to his expressed interests but also to values, influences, and other reasons which pertain to decision. Possibly those seniors who tended to recollect their motivations most inaccurately were those who would have profited most from opportunities to clarify, explore and define the determinants which brought them to college and influenced their perceptions of higher education.

The discussion to this point has been uncomfortably speculative. Most of the generalizations seem themselves highly susceptible to change. Greater confidence might be placed in research on motivation for college if the sources of variability were carefully controlled, if, concommitantly, methods of analysis reduced artifacts and if instruments measured relevant variables.

In conclusion, then, single items cast in retrospective form seem generally inadequate as measures of prior motivation for college among individuals. It is assumed that in subsequent chapters factor analysis will clarify basic motivational structures underlying the decision to attend college and also that in comparing constant students with other groups the use of factor scales applied to the freshman inventory will correct some of the limitations in previous studies. But, first, in Chapter V the stability of determinant items when placed in check list form and administered to public school pupils will be examined.

CHAPTER V

THE STABILITY OF REPORTED DETERMINANTS AMONG PUBLIC SCHOOL PUPILS

In this chapter the stability from grade 9 (prospect) to grade 11 (retrospect) of the reported determinants of secondary school study program is examined. Indices of change and stability in item responses within various subsamples are presented for reported determinants and also for personal characteristics, study program choice, plans after high school and occupational goals. Results are interpreted in terms of individual differences. Implications for curriculum and guidance are then discussed.

Problem and Objectives

After an intensive analysis of current procedures in distributing students in Hawaii among educational programs or tracks, Dole and Sherman (1963a) concluded that school officials, children and parents tended to assume a reasonable constancy among pupils in characteristics and plans underlying assignment to an educational specialization. If on entering secondary school a student proposed to enter a specific educational specialization and he was qualified in prerequisites (ability level and past performance) his preference was likely to be honored. His reasons and his plans would probably be accepted at face value. He would probably have had an opportunity through group and individual guidance procedures in grade 9 and through orientation before and during the first weeks in high school to review his educational and vocational objectives.

It had also previously been established that at the 6th, 9th, and 12th grade levels (Dole, 1961) as well as at the 11th grade (Dole and Sherman, 1963b) reported determinants (values, interests, and influences), occupational aspirations, and post-high school plans and such personal characteristics as sex, ethnicity and parental occupation were logically associated with secondary school study program. However, when surveys were repeated after one week, although group distributions did not change substantially, on some items substantial proportions of individuals did alter their responses (Dole, 1961).

If the time period between surveys were extended from seven days to approximately two years, for groups and for individuals who were moving up the educational ladder from intermediate school to high school, how stable would reported determinants be? How much confidence could be put in them? It would be expected logically that measures of relatively invariant personal characteristics would set a bench mark of stability against which to compare changes in plans, attitudes, and motivations. That is, changes in sex, ethnicity, and to some extent parental occupation items could be attributed to such factors as subject error, confusion, resistance, administrative error, etc. Specifically, the research reported in this chapter is directed at three questions about groups and individuals.

1. What is the relation between study program preferred in grade 9 before high school and study program enrolled in grade 11?

2. How do the following types of items compare in stability: plans, ethnicity, parental occupation, and attitudes?

3. How stable, when measured in prospect and retrospect, are reported determinants--that is, influence, value, and interest items?

The findings might be important not only for curriculum organization and guidance but also in designing comparisons between consistent and inconsistent pupils.

Procedure

Formation of Samples

In April 1960, as 9th graders, 7,627 children had filled out the inventory, What I Want to Do (Iwakami and Dole, 1962). In March 1962, 7,291 eleventh graders took a similar inventory, Your Study Program and Your Future (Dole and Sherman, 1963b).

The pupils who completed the 9th grade inventory and whose names and responses had been punched on individual data cards were matched against the 11th grade subjects. When 5,337 subjects had been successfully paired, data from both cards for each individual were transferred to a merged tape using a 1401 IBM computer. The boys included 65.9 per cent of those sampled in grade 9 and 69.2 per cent of those sampled in grade 11. Of all the girls who took the 9th grade inventory 70.8 per cent also took the 11th grade inventory, and of all the girls who completed the 11th grade inventory 73.7 per cent had also completed the 9th grade survey form.

Among those omitted from the tape merge, it was not possible to identify the exact proportions who were not included in one survey or the other because they had left or entered the Hawaii public school system during the two-year period after the 9th grade survey; because their answer sheets could not be matched for technical reasons; because they were absent from school; or because they attended one of the nine intermediate schools or one high school which did not return completed questionnaires. However, on the basis of an intensive follow-up of Waialua Intermediate School 9th graders (Dole and Sherman, 1964a), in which all subjects were accounted for, and of known figures for dropouts in Hawaii, this sample is considered to be representative and to include slightly over 80 per cent of all pupils who remained in the public school system over the two-year period. The sample is also considered representative of all 11th grade public school pupils in the state at the time of the survey. On the secondary study program item, the sample 9th grade distribution differed slightly but significantly ($X^2 = 70.67$, 4 df) from total 9th grade but the sample 11th grade did not differ ($X^2 = 8.13$, 4 df) from the total 11th grade. It should be noted also that for technical reasons the number of subjects used in the analysis of the stability of items was sometimes less than the sample total and varied in size from item to item. However, except for ethnicity and generation, the reduced subsamples were representative of the total 11th grade. Because of these discrepancies in the large sample, findings from the intensive pilot study (Dole and Sherman, 1964a) are also presented in summary form. This subsample, which was treated separately from the state sample, included 104 pupils at Waialua High School who had participated in the 9th grade survey when at Waialua Intermediate School.

Surveys

All survey instruments were designed by the investigators; the surveys were administered by the public schools under the supervision of the Hawaii Department of Education (see Dole, 1961; Iwakami and Dole, 1962; Dole and Sherman, 1963a).

Items

Except for a few slight modifications in wording to fit changes in educational level, the items which will be analyzed for stability in this chapter were phrased identically in grade 9 and grade 11. The check lists of reported determinants were preceded by a question on study program, "When you go to high school you will have to choose from one of the five kinds of study program listed below in the boxes. Which ONE of the five study programs would you like to take in high school?" Each set of check list determinants was introduced in grade 9 by a general question about "the study program you want in high school."

In grade 11 the study program item read, "Which ONE of the five study programs is most like the one you are now taking?" In a preliminary study (Dole and Sherman, 1963a) the validity of this item was tested by comparing school records with student self-assignment (for 94 subjects, 62 per cent agreement). It was concluded that self-reports of educational program assignment agreed moderately but not closely with observed program assignments.

Each set of check list determinants in grade 11 was introduced by the same general question as in grade 9 but phrased in the past tense, "the study program you wanted in high school" (see Dole, 1961; and Dole and Sherman, 1963b), for copies of the two inventories).

Analyses

For comparison between study program preferred in grade 9 and enrolled in grade 11, a scatterplot was cast, distributions were compared for significant differences using chi square for correlated groups (McNemar, 1962, p. 225) and the extent of association measured by calculating C (coefficient of contingency). The per cent of agreement between grade 9 and grade 11 for each program option and total was computed according to the following formula $\frac{No_{12}}{No_1}$ in which O_{12} is the same option on first and second survey and O_1 is the option on first survey.

Per cent of change was measured by $\frac{No_2 - No_{12}}{No_1}$ and per cent entering an option by $\frac{No_1 - No_{12}}{No_1}$.

In analyzing items which concerned plans, personal and social characteristics, and attitudes, distributions were compared using chi square for correlated groups; per cent agreement, per cent of change and per cent entering were computed.

Each of the reported determinant items was treated separately. To determine whether the proportion responding to each item similarly in both grade 9 and grade 11 differed significantly from the proportion responding to that item in grade 9 Mainland's tables (Mainland, Herrera and Sutcliffe, 1956, Tables, I and II) for use in fourfold contingency tests were consulted. These tables permit an assessment of significance at 95 per cent and 99 per cent probability levels and are considered a substitute for chi square (two tailed) with Yates correction where exact probabilities are unnecessary. In addition, if distribution assumptions were satisfied ϕ was estimated from Edgerton's (1960) tables as an indication of the amount of correlation between two administrations of the same check list item. The stability of each item was calculated for those checking on both surveys (agree) and separately for the total of those checking and those not checking on both surveys (agree and no answer). Mainland's tables were also consulted to appraise the significance of differences in item popularity between grade 9 and grade 11.

Each of the three a priori classifications of check list determinants (influences, values, and interests) in grade 9 was compared with grade 11 in total responses (chi square), mean number of determinants checked per subject, overall stability, and order of popularity (rho). In all analyses males and females were treated separately. At this time program choices were not controlled but in a later chapter the stability of items within educational specializations is considered.

Results

Program

The chances were a little better than 5 out of 10 that a youngster would be enrolled two years later in the secondary school study program he had preferred in intermediate school (Table 10). The most popular programs (college general and business for girls, technical and college science for boys) were also most stable but attracted fewer entrants than the group as a whole. (See also Appendix II for a complete cross-tabulation.)

Plans

In their plans after graduation from high school (Table 11) 5 in every 10 males and 6 in every 10 females were stable over the two-year period. So far as college intentions were concerned, 7 out of 10 males and females responded similarly to both inventories and relatively few adopted a college plan after intermediate school. Of the handful who anticipated quitting high school before graduation fewer than one-tenth were stable. Compared to other plans, relatively fewer boys were stable in anticipating jobs and fewer girls in anticipating military service and jobs.

A list of 82 occupational titles, developed by Iwakami and Dole (1962) for this population, were first analyzed individually, and then, as shown in Table 12, grouped according to socioeconomic classification. (Note that in this analysis the stability of each classification is a function of the single options within it. For the Waialua sample the stability of classifications was also examined.) Approximately 4 of 10 females and 3 of 10 males were stable

TABLE 10

STABILITY IN SECONDARY PROGRAM AMONG PUBLIC SCHOOL STUDENTS

Secondary program	Males					Females				
	Grade 9	Grade 11	Net change	Status in Grade 11		Grade 9	Grade 11	Net change	Status in Grade 11	
				entered	stable				entered	stable
	N	N	%	%	%	N	N	%	%	%
College science . .	754	601	-20	22	57	432	351	-19	37	45
College general . .	486	562	+16	71	45	939	924	- 2	37	61
Technical	871	907	+ 4	42	62	179	152	-15	60	25
Business.	184	179	- 3	70	27	967	928	- 4	30	66
Terminal.	261	307	+18	90	27	202	364	80	138	42
All programs. . . .	2,556	2,556		49	51	2,719	2,719		44	56

Note.--All percentages based on 9th grade N for program by sex. Figures in grade 11 N column are adjusted to grade 9 N.

TABLE 11

STABILITY IN POST-HIGH SCHOOL PLANS AMONG PUBLIC SCHOOL STUDENTS

Plan after high school graduation	Males					Females				
	Grade 9 N	Grade 11 N	Net change %	Status in Grade 11 entered %	Status in Grade 11 stable %	Grade 9 N	Grade 11 N	Net change %	Status in Grade 11 entered %	Status in Grade 11 stable %
Quit school before	19	13	-32	37	1	11	8	-27	64	1
Vocational school .	729	734	+ 1	49	49	732	971	+33	68	64
Homemaker	8	5	+38	63	--	19	42	+121	211	11
Find job.	275	220	-20	74	26	360	349	- 3	59	38
Military service. ..	456	612	+26	87	53	108	93	-14	54	32
College	1,743	975	- 9	25	69	1,477	1,268	-14	14	71
No answer	62	33	-47	53	--	38	14	-63	37	--
All plans	2,592	2,592		48	52	2,745	2,745		38	62

Note.--All percentages based on 9th grade N for program by sex. Figures in grade 11 N column are adjusted to grade 9 N.

TABLE 12

STABILITY IN OCCUPATIONAL GOAL BY SOCIOECONOMIC CLASSIFICATION AMONG PUBLIC SCHOOL STUDENTS

Socioeconomic classification	Males					Females				
	Grade 9 N	Grade 11 N	Net change %	Status in Grade 11 entered %	Status in Grade 11 stable %	Grade 9 N	Grade 11 N	Net change %	Status in Grade 11 entered %	Status in Grade 11 stable %
Professional (25 options) . .	888	817	- 8	58	34	1,244	1,142	- 8	46	46
Semi-professional (11 options) . .	280	286	+ 2	81	21	153	164	+ 7	84	23
Managerial (4 options). . .	133	219	+65	142	23	18	43	+139	228	11
Clerical (5 options). . .	41	45	+10	106	10	720	682	- 5	45	49
Pers. services (11 options) . .	268	229	-17	68	18	321	447	+39	104	35
Skilled (15 options) . .	718	697	- 3	66	31	17	11	-35	65	--
Semi-skilled, unskilled (8 options). . .	82	93	+13	101	12	13	8	+39	62	--
Housewife (1 option) . . .	--	--	--	--	--	70	75	+ 7	90	17
Don't know (1 option) . . .	31	81	+161	242	19	32	35	+ 9	109	--

Note.--All percentages based on 9th grade N for classification by sex. % stable based on cumulated N's of all single options within classification. Figures in Grade 11 N column are adjusted to grade 9 N.

TABLE 12 (Cont'd)

STABILITY IN OCCUPATIONAL GOAL BY SOCIOECONOMIC CLASSIFICATION AMONG PUBLIC SCHOOL STUDENTS

Socioeconomic classification	Males					Females				
	Grade 9	Grade 11	Net change	Status in Grade 11		Grade 9	Grade 11	Net change	Status in Grade 11	
				entered	stable				entered	stable
	N	N	%	%	%	N	N	%	%	%
Other (1 option) . . .	46	43	- 7	83	11	76	76	--	87	13
No answer.	31	8	-74	26	--	30	11	-63	37	--
All 82 options . .	2,518	2,518		73	27	2,694	2,694		59	41

in occupational aspiration. The girls were most likely to indicate the same goal in both surveys if it were in a professional or clerical category and least likely in the managerial, skilled, semiskilled, housewife, don't know, other and no answer categories. Boys were most stable within the professional classification. Ten per cent or fewer were stable in their interest in clerical, semiskilled and unskilled, other and no answer categories. The most stable single titles for boys (see Appendix II) were dancer, singer, mechanic, engineer, and biologist; for girls teacher, secretary, beautician, and nurse. Least stable for boys were technician, physicist, musician, and supervisor; and for girls architect, cannery worker, mathematician, and musician.

Comparative Stability of Items

In Table 13 all items used in both surveys (except sex affiliation) are listed in order of stability with male and female samples reported separately. Responses to national-ethnic origin were most likely to be stable and anticipated changes in self and specific occupational preference least stable from grade 9 to grade 11. Because of the large N's involved, the distributions of the group among options at grade 9 differed significantly from the distributions in grade 11 in all instances. However, the distributions of fixed characteristics were quite similar.

Reported Determinants

The most stable influence items (Table 14), reported by both males and females, were tests and friends and the least stable other and random choice. Girls were more likely than boys to check the same determinant on retest.

Comparing the group at grade 9 with itself in grade 11, the males tended to report fewer influences and the females more influences on retest. The largest change, a decline in the reported influence of parents, occurred for both sexes. Classes also declined in influence as did movies and TV, especially for the boys. Formal guidance procedures--tests, counselor, and career day--increased in influence.

The most stable value options were, for the young men, practicality of subject, and satisfaction in the specialization and for the young women, satisfaction and aptitude; in contrast the few grade 9 boys who checked fastest path to a diploma or "some other reason not listed" rarely checked it a second time in grade 11. Girls who checked fastest path or easy courses rarely responded to these items on second presentation.

For the boys values of practicality of subject and economic security increased slightly but significantly in popularity;

TABLE 13

STABILITY OF QUESTIONNAIRE ITEMS FROM GRADE 9 TO GRADE 11 AMONG MALE AND FEMALE PUBLIC SCHOOL SAMPLES

Item	Sample	N of sample	Number of options	Stability	Significance of group change	
					X^2	df
National-ethnic origin	females	1,600	9	88.6	46.37**	8
National-ethnic origin	males	1,293	9	84.4	34.13**	8
Post-high school plans	females	2,745	6	61.8	157.23**	6
Generation in U.S.	females	1,600	5	60.1	142.43**	5
Secondary study program.	females	2,719	5	56.5	84.04**	4
Generation in U.S.	males	1,293	5	55.7	96.83**	5
Father's occupation.	females	2,739	83	53.9	109.11**	8[a]
Post-high school plans	males	2,593	6	52.5	66.66**	6
Father's occupation.	males	2,579	82	52.2	82.00**	8[a]
Secondary study program.	males	2,556	5	51.4	64.40**	4
Certainty about study program.	females	2,745	5	46.9	170.54**	5
Certainty about study program.	males	2,592	5	41.9	104.43**	5
Occupational preference.	females	2,694	82	40.8	62.70**	10[a]
Anticipated change in self	males	2,592	5	37.5	248.47**	5
Anticipated change in self	females	2,745	5	37.0	310.16**	5
Occupational preference.	males	2,518	82	27.4	89.76**	9[a]

[a] The 82 options were grouped to facilitate analysis.

**P < .01.

TABLE 14

DETERMINANTS OF SECONDARY STUDY PROGRAM REPORTED IN GRADE 9 AND IN GRADE 11

Determinant	Grade 9	Grade 11	Relationships		
				Stability	
	%	%	∅	Agree	Agree and NA
Influence Determinants					
"Usually when we like (choose) something it is partly because of the things that have happened to us or the people we know. What sorts of things have you done and who are the people you know that made (caused) you to decide what study program you want(ed) in high school?"					
Hobby. Things like building model airplanes or collecting dolls.	23 9	19** 7**		36 27	74 88
Free time activities. Things like the Boy or Girl Scouts or just the things I did outside of school when I had free time. Just playing	17 13	14** 13		22 25	76 80
Teacher. Any teacher I have had.	19 27	19 27	 80	32 46	75 71

(Table continued next page)

Note.--Responses of 2,518 males are represented in first line after each item; 2,694 females in second line. Omissions from grade 9 items in grade 11 are underlined, additions are indicated in parentheses.

*Percentage change from grade 9 to 11 significant at 95 per cent level of confidence.

**Percentage change from grade 9 to 11 significant at 99 per cent level of confidence.

TABLE 14 (Cont'd)

DETERMINANTS OF SECONDARY STUDY PROGRAM REPORTED IN GRADE 9 AND IN GRADE 11

Determinant	Grade 9	Grade 11	Relationships		
				Stability	
	%	%	ø	Agree	Agree and NA
Influence Determinants (Continued)					
Parents. My mother and father (had) a lot to do with picking my program	36	22**	49	33	65
	44	28**	26	39	63
Classes. What I have learned in my classes at (intermediate) school	22	16**		28	74
	25	19**		29	70
Work experience. I have done the kind of work for which I want(ed) to study and I like(d) it.	22	21	76	35	73
	16	15		29	78
Friends. Talking things over with my friends.	28	31**	51	38	63
	34	38**	44	47	59
Relatives. Talking to my aunts, uncles, cousins, brother or sister.	16	14**		29	79
	23	23	83	41	72
A counselor. My school counselor.	7	15**		24	83
	8	17**		39	82
Aptitude and interest tests. Tests I have taken to find out what I am good at doing and what I like(d) to do best. . . .	24	27**	84	45	70
	24	35**	90	54	67.
Random choice. First thing I thought of. I did not think about what I would study in high school until now (then) . .	6	6		11	89
	6	4**		8	91
Career day program. The kind of program we have at a school that is all about the career we would like to have	7	12**		25	85
	7	18**		31	80
Movies and TV. I have (had) seen on TV and in the movies the kind of thing I would like to do	17	10**		24	81
	20	16**		29	77
People in the field. I have (had) talked to people who are doing the kind of thing I would like (want) to do.	17	20**		33	74
	24	32**	80	48	67

(Table continued next page)

TABLE 14 (Cont'd)

DETERMINANTS OF SECONDARY STUDY PROGRAM REPORTED IN GRADE 9 AND IN GRADE 11

Determinant	Grade 9	Grade 11	Relationships	Stability	
	%	%	ø	Agree	Agree and NA
Influence Determinants (Continued)	4	3		5[a]	93
Other. Some other reason not given here	5	4*		13	91
Value Determinants					
"What are some of the reasons why you want(ed) the high school program you chose?"					
Aptitude. I think (thought) I will (would) be able to	32	33	22	42	62
do well in that kind of study.	28	36**	72	52	65
Chance to serve others. I want(ed) to be able to help	16	11**		20	80
others later on.	31	29*	67	47	69
Practicality of subject. It will (would) be useful to	37	40**	39	51	61
me later on.	39	47**	41	56	58
Preparation for specialization. I want(ed) to learn	33	26**	47	37	65
to be good at doing the one thing I want to study for.	33	31*	45	39	62
Security of employment. I feel (felt) there are (were)					
many sure jobs in the kind of thing I will (would)	24	26*	57	35	66
study for.	23	26**	77	39	70
Potential income. I hope(d) what I study(ied) will	23	19**		31	72
(would) help me to earn a lot of money later on. . . .	13	10**		22	82
Fastest path to a diploma. I can (wanted to) finish	5	4*		9	91
school quickly and get my high school diploma.	4	2**		9	95
Independence. It will (would) help me to stand on my	24	17**		28	73
own two feet and do thingsfor myself and by myself . .	27	25**	53	34	66

(Table continued next page)

[a] Does not differ from chance expectations ($\chi^2 = 0.25$).

TABLE 14 (Cont'd)

DETERMINANTS OF SECONDARY STUDY PROGRAM REPORTED IN GRADE 9 AND IN GRADE 11

Determinant	Grade 9	Grade 11	Relationships		
				Stability	
	%	%	ø	Agree	Agree and NA
Value Determinants (Continued)					
Opportunity for advancement. It will (would) help me to get a good job in which I can (could) get ahead in life	39	29**	29	37	60
	32	28**	43	37	64
Easy courses. The study is (was) not hard for me to do . . .	7	6*		16	90
	6	3*		13	94
Prestige. I will (would) stand high among those who knew me and I will (would) be respected for what I do.	7	6		16	89
	5	5		18	91
Satisfaction from field. I am (was) interested in that kind of study and enjoy(ed) it.	37	33**	47	46	65
	45	46	35	59	61
Self-improvement. I can (wished to) help myself become a better person	21	18**		25	71
	26	27	58	36	67
Parenthood. It will (would) help me to become a better mother or father someday.	10	6**		13	86
	16	12**		27	81
Some other reason not given here.	1	3**		12	96
	1	3**		21	96
Interest Determinants					
"What are the kinds of thing that you like(d) and that helped (caused) you to choose the study program you want(ed) in high school? . . . WORK WITH:"					
Words. Such as writing, reading, spelling, and so forth.	14	11**		27	83
	40	30**	47	45	65

(Table continued next page)

TABLE 14 (Cont'd)

DETERMINANTS OF SECONDARY STUDY PROGRAM REPORTED IN GRADE 9 AND IN GRADE 11

Determinant	Grade 9 %	Grade 11 %	Relationships ø	Stability Agree	Stability Agree and NA
Interest Determinants (Continued)					
Ideas. Such as planning, thinking about things and so forth	39	36**	44	47	62
	37	36	48	48	63
Food such as cooking, baking, and so forth	5	4*		15	93
	15	11**		30	82
Machines such as cars, electric toys, adding machines, and so forth	49	43**	48	59	66
	8	12**		30	85
Numbers such as figuring arithmetic, and so forth	31	28**	81	50	72
	27	25*	79	45	72
Adults such as directing them or helping grown-ups, selling things to them or being a leader for them	6	5		9	91
	11	10		21	84
Music such as playing a piano, dancing, singing, and so forth	10	7**		27	88
	17	12**		35	63
Children and youth such as teaching little children, playing with them and taking care of them	6	3**		12	93
	36	31**	64	50	62
Science such as studying about electricity, the sun, the stars, and so forth	32	28**	76	50	72
	14	12**		40	84
Plants and animals such as farming and growing things	17	13**		35	82
	7	5**		19	90
Art such as drawing, painting, and so forth	14	11**		31	84
	12	10**		35	86
Some other things not listed here	4	5*		16	92
	7	8*		19	87

opportunity for advancement and independence declined. The girls stressed practicality and aptitude more in grade 11 than in grade 9 and advancement and parenthood less. Overall, the male subjects checked fewer value options in grade 11 and were less stable than the females.

Approximately half of the males who checked machines, numbers, and science in 1960 as determining interests of program preference checked them again 23 months later. Girls were most stable in responding to children and youth, ideas and numbers. The boys showed the least agreement with themselves over time in respect to adults and children and youth, the girls other, and plants and animals.

Both sexes indicated fewer interests on the second inventory. More girls liked machines, but fewer checked words, music, and children and youth. For the boys the largest declines were in machines, science, and plants and animals.

Overall Stability

If each check list is considered to represent a hierarchy in which the relative attractiveness of items for a given population can be measured, the rank order correlation of item popularities in grade 9 within each determinant grouping with item popularities in grade 11 is a useful summary statistic of relative change which is generally independent of response sets. Interests and values (Table 15) were highly and significantly similar but influences slightly less similar.

Waialua Sample

The data in Table 16, which were derived from the Waialua sample (Dole and Sherman, 1964a) represent a single school and are presented here as a cross-validation of findings. Also it was possible to treat occupational goal and parental occupation by socio-economic classifications. Within broader categories occupational aspiration and father's occupation were second to national-ethnic origin among all items in stability. As in the statewide sample attitudes about self and anticipated change were among the least stable. Influences were less stable than value and interest determinants.

Discussion

Between intermediate and secondary school for these populations change seemed generally more characteristic than stability.

TABLE 15

RANK ORDER CORRELATIONS OF 9TH GRADE WITH 11TH GRADE DETERMINANTS

Group	Influences (N = 15)	Values (N = 15)	Interests (N = 12)
Male	.88**	.93**	.95**
Female	.83**	.96**	.90**

**P < .01.

TABLE 16

STABILITY OF QUESTIONNAIRE ITEMS AMONG WAIALUA SAMPLE (N = 104)

Item	Number of options	Stability	Significance of group change	
			X^2	df
National-ethnic origin . .	9	85	1.32	7
Father's occupational classification	11	62	13.42	10
Occupational preference classification	12	62	1.02	6
Post-high school plans . .	6	61	20.00**	4
Generation in U.S.	5	56	2.15	5
Reported values.	15	49	12.86	14
Secondary study program. .	5	48	13.53**	4
Occupational preference (7 most popular)	83	45	3.91	6
Reported interests	12	45	9.86	11
Certainty of study program preference . . .	5	42	20.55**	5
Anticipated change in self.	5	40	10.33*	5
Reported external influences on program choice.	15	35	33.36**	14

Note.--Table adapted from Dole and Sherman (1964 a, p. 16).

*P < .05.

**P < .01.

However, whether change and stability were examined in terms of groups, of individuals or of the types of items, individual differences were apparent. That is, some pupils expressed choices and maintained them, others did not; girls as a group tended to be more stable than boys; some plans and determinants were markedly more stable than others; some options within an item were more stable than other options. Neither change nor stability can, it is clear, be assumed to be constant characteristics of all young people nor of all kinds of items nor options.

For the moment consideration will be postponed of that portion of variability which is a function of irrelevant unreliability (subject resistance and error, ambiguously written items or errors in key punching). Some of the forces in these individuals and their environment which may have contributed to change seem fairly evident. All subjects between the first and second surveys graduated from intermediate school and successfully completed a year of high school, experienced new teachers, new courses, new procedures, and undoubtedly also experienced outside of school new part-time or summer jobs, new friends, and new life events. For the first time a major educational decision was presented, made, and tested out. A failure of secondary program to fit prior conceptions of requisite values, interests, and abilities may have led to changes in educational-vocational plans.

If influence items among reported determinants are construed as the young person's perceptions of the impact of the environment upon him and if that environment is providing a multitude of potentially impactful events daily, it would seem logical that casual and formal experiences, family, friends, and significant others might lead to many changes in plans and that low agreement about external influences kpon program choice would be found after two years.

For this sample college aspirations were maintained more firmly than other post-high school plans but were attractive to relatively few new entrants. It seems reasonable to suppose that the high prestige of college in current society, the visible rewards for the many grandchildren of immigrants in these samples, the pressures of friends, teachers, and family encouraged early and strong commitment. For many of these students it is now demonstrated that this commitment is entered before the last year of intermediate school. The sorting and selection procedures imposed by college admissions officers were yet to come.

How can the greater stability of girls generally than boys in educational planning and in influence and value determinants be accounted for? Perhaps this finding was a product simply of greater maturity. Perhaps the common role models for girls available to the sample were easier to perceive and to follow comfortably. "I decided I needed a college education in order to enter teaching which will be useful when I have a family of my own," was a common statement when 9th grade girls were interviewed. The point has been made frequently in these studies (Dole, 1964b) that girls in educational decision making differ in certain respects quite distinctly from boys.

Another source of variability in this study lay within persons and may be described with such terms as motivation, attitude, need, self-concept, value, interest, etc. Presumably in answering the same questionnaire items twice about attitudes toward self, toward future, and toward interest and value determinants some subjects may have changed in part as a function of personality development between age 15 and 17. Such changes within individuals interacting with environmental variations could also help to account for the variability of some influence items. With increasing independence, fewer boys and girls would be expected, as in fact was the case, to attribute program choice to the influence of their parents.

Was it inconsistent that the influence of parents and independence as a value should both decline in popularity? It is speculated that possibly as their struggle for adult autonomy seems closer to realization these youngsters were less concerned about the abstract value of "independence" and more concerned about such reality considerations as practicality of subject, economic security for boys, and aptitude in specialization for girls.

There was evidence that even before high school a substantial proportion of these youngsters took into account satisfaction and evidence about themselves from tests and inventories in deciding upon their study programs and then two years later recalled these as important determinants.

The most stable interest determinants seemed also to be among the most popular and were vocationally relevant and sex-related (science items for boys, social service for girls). Pending further research it is assumed that the stable 5 out of 10 in program decision may have included more of those who had committed themselves to an occupational goal before high school.

Another major source of variability in studies of this sort, as has been discussed in the preceding chapter, lies in methods of measurement. By comparing types of questionnaire items some tentative conclusions about the effect of administrative procedures and subject cooperation may be drawn. Since less than .5 per cent changed sex (!) from grade 9 to 11 and since interviews (Dole and Sherman, 1964a) showed that even students of limited ability comprehended the instrument, resistance to the survey, gross inability to cope with it, errors in data processing, etc., may be considered as very minor factors. Since approximately one in six subjects shifted ethnic origin over two years, it is reasoned that for each of the two surveys approximately 8 per cent on an item relating to an invariant characteristic were unstable. If item options are examined (Appendix II) it can be observed that some (Chinese, Japanese) were highly stable for both groups and individuals while other options (other, part-Hawaiian) changed signficiantly. On the basis of this finding and the test-retest reliability studies over one week (Dole, 1961) we conclude that for younger populations variations in item clarity may contribute, to a small but important extent, to overall instability. Perhaps a useful rough rule of thumb is that approximately one-sixth of individual change and one-tenth of group change in these studies were irrelevant to environmental and individual sources. It is suspected that low intelligence, poor reading skill, minimal motivation, and school administrative procedures may have accounted for most of these extraneous sources of variation. These findings reinforce the desirability in research of subdividing populations or of replicating on several samples(as the Waialua pilot study was used in this research), and of accompaning mass surveys with semistructured interviews of typical respondents. Another important point, such uncontrolled variability further reduces confidence in self-report inventories as tools for individual counseling where planning and prediction are stressed.

Consideration of the findings on the relative stability of items and options supports the point that stability in occupational goal may in part be a function of item treatment. Specific occupational aspirations for males varied most of all items, yet when analyzed by socioeconomic level vocational aims were comparable in stability to parental occupational classification and to ethnic origin. A youth is quite likely to shift from doctor to lawyer, for example, but much less likely to shift from doctor to clerk.

A law of proximity of decision in relation to planning is tentatively suggested. Where plan options are equal in generality, and their visibility (popularity) controlled, the more distant the decision, that is the less it is tested by reality, the more likely it is to be stable. Such a law might account for the greater overall stability of post-high school plan than study program.

As was true for the college study described in the last chapter, measures of the attitudes, values, and interests underlying decisions were more unstable than the decisions themselves. Recalling Bloom's (1964) conclusions after reviewing the literature, it may be simply that the reasons that persons give for a decision tend to be superficial as presently measured.

Since the determinant items presented in grade 9 referred to the same decision (study program) as did those presented in grade 11 and approximately half the subjects had decided upon their grade 11 program preference by grade 9, the instability of the determinant items theoretically would be only moderately influenced by environmental changes over the two-year period. As in the constant college students (Chapter IV), program consistent public school subjects who changed in reported determinant over the two years presumably exhibited inaccurate retrospection.

Finally, if it be granted that young people are at least as likely to contradict themselves in other relationships over a two-year period (e.g., academic advising) as they are in answering questionnaires, across-the-board assumptions by school authorities in designing curricular structures that pupils will be constant about their aspirations and reported determinants seem unsupported by this research. On the other hand, on most items a minority of from 30 to 40 per cent were stable. In Chapter IX samples of these students who were consistent in their plans will be compared on determinants and other variables and in stability with those who changed their educational plans.

CHAPTER VI

FACTORS IN COLLEGE ATTENDANCE[1]

Major motivational factors underlying the decision to attend college are identified in this chapter on the basis of five analyses. Thirteen factor scales are developed for the instrument, Reasons for Going to College. A tentative picture of the domain, motivation for college attendance, is discussed.

Problem and Objectives

The research reported in this chapter is concerned with the identification of self-reported factors determining the decision to attend college. It seeks to show the extent to which such factors are stable and generalizable to various educational groups and decisions.

Also, because of the large number of items and their relative instability (as shown in Chapter IV) it was desirable to develop factor scales for the inventory, Reasons for Going to College. These factor scales would then be applied to compare the constant college students with other groups of entering freshmen (Chapter IX); they might also be helpful in developing scales for the secondary studies (Chapter VII).

Procedure

Subjects

The responses of the constant students (Chapter IV) were divided into four groups: (a) the 214 male protocols from the freshman survey; (b) the protocols of the same 214 individuals from the senior survey; (c) the 306 female freshman protocols; (d) the protocols of the same 306 females as seniors. In addition, to contrast with the samples who had remained in college, a fifth group was selected for study. This group included 350 male freshman who had subsequently been dropped for academic reasons.

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[1] John M. Digman inspired the design described in this chapter, exercised general supervision of the five factor analyses and assisted in preparing the technical descriptions. A version of this chapter was presented with Digman to the Midwestern Psychological Association, Chicago, 1965.

Variables

Sixty-eight of the items from Reasons for Going to College were selected for analysis. (Ten items were discarded because more than 90 per cent of the subjects in each of the four constant groups considered them of no importance to the college decision--scale value of 0.) See Chapter IV for details on the development and administration of this instrument. Total raw score on the Ohio State Psychological Examination (Form 25) and grade point ratio[1] at the end of the first semester were also introduced as variables. It was hypothesized that there might be an academic excellence factor among the inventory items.

Factor Analyses

Each variable was correlated with every other variable for the four subgroups, yielding four 70-order matrices. Examination of the latent roots of the full matrices (that is, with unities in the main diagonal) revealed in each case 19 roots in excess of 1.00. Accordingly, it was concluded that 19 common factors were involved for all groups.

Using squared multiple correlations as communality estimates, 19 principal axes factors were extracted and rotated by Saunders' Equamax procedure. All of the calculations were carried out on the 7040 computer at the Statistical and Computing Center of the University of Hawaii.

Definition of Major Factors

For purposes of this research a major factor is defined as one which can be identified when the factors resulting from several analyses are matched across groups. To match factors obtained in the four different analyses the following procedure was observed: (a) select a factor from the male freshman group and note items with loadings of .30 and above; (b) find a factor in the female freshman group having a majority of items with loadings over .30 corresponding to the items in the freshman male group; (c) continue matching factors in senior male and senior female groups; (d) review factors in each group for items with loadings from .15 to .29.

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[1] In computing grade point ratio, A was assigned a value of 4, B of 3, C of 2, D of 1, and F of 0. Total honor points were divided by total credit hours for each student.

Whenever possible each of the 70 variables was assigned to but one major factor on the bases, first, that the variable loaded higher on that factor than on any other and, secondly, that it had a loading of .30 or above in one freshman group or a loading of .15 or above in three out of four groups.

After the investigator had assigned all variables among major factors, the major factors were reviewed independently by an associate (Digman) and discussed. Names were then assigned to the major factors on the basis of salient items, the results of other studies, and suggestions by four psychologists.

Finally, as a check on the validity of the procedures and on the applicability of the major factors to other college freshman groups, the responses of the dropped males were factor analyzed. By inspection the 19 factors which were extracted were matched against the independently derived major factors. Subordinate factors, which had not been included in the independent major factors, were also identified.

Results

Factor Analyses

The results of the four constant student factor analyses, the dropped student analysis and the matching of 76 factors are presented in detail in Appendix III. It was possible to divide the 70 variables among 14 major factors. In Table 17 the variables with their loadings are grouped by these major factors. Twelve subordinate factors are presented in Appendix II.

For the analysis of the dropped male group item loadings are shown in the left hand column of Table 17 whenever a fit with a major factor was identified. In the dropped group 60 variables out of 70 attained significant loadings on one of the 14 major factors.

Factor Scales

With a few small modifications as shown in Table 17, 13 of the 14 major factors were formed into scales. Since Factor XIV included the ability measures but no items from the survey instrument, it was not treated as a college determinant factor scale.

Discussion

Thirteen major factors have been identified as underlying the decision to attend college. These factors were confirmed when

TABLE 17

VARIABLES COMPRISING MAJOR FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
	Dropped	Freshman survey		Senior survey	
		males	females	males	females
Factor I - Vocational Reason					
A-1 Degree necessary for work	62	63	42[a]	64	30
Factor II - Social Reason					
A-4 Make new friends	49	66	67	66	51
A-8 Learn to get along with others. . . .	45	67	62	69	58
A-11 Develop socially	53	68	70	71	60
A-16 Contact advantageous . . .	37	44	36	60	
A-17 Be more influential. . . .	25	41	46	38	17
A-18 Meet person to marry.	36	36	35	45	28
A-27 Leadership civic affairs.	19	46	38	34	
Factor III - Conformity					
A-5 Always expected.	38	57	59		67
A-6 Persons respected most	45	33	24	18	21
A-10 Friends going .	39	55	41	47	28
A-21 Increase reputation	39	59	36	27	25
A-23 Family always gone	30	48		31	45
A-24 Decision made for me	16	64	65	52	69
A-28 Parents insisted		79	71	67	69
A-29 Girl like me expected to go . .	21		65		70
A-30 Fellow like me expected to go . .	21	68		75	

(Table continued next page)

Note.--Loadings below 15 not reported in this table. Decimal points omitted.

[a] Combines with Factor V in freshman females.

TABLE 17 (Cont'd)

VARIABLES COMPRISING MAJOR FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
		Freshman survey		Senior survey	
	Dropped	males	females	males	females
Factor III - Continued					
B-10 Value of prestige .	24	43	23	19	
C-4 Influence of parents.		79	71	67	69
C-7 Influence of friends[b]	23		31	23	25
C-8 Influence of relatives[b]	19	33	34	25	28
Factor IV - Curiosity					
A-7 Serious curiosities.	48	63[c]	42	28	37
A-13 Explore several lines.			61	29	58
A-15 Find out about fields	42	47[c]	51	58	63
Factor V - Academic Value					
A-19 Enjoyed studying. .	24	48	50	45	40
A-26 Degree for graduate school	18	53	27	52	
B-1 Value of aptitude. .	47	26	22	49	16
B-4 Value of specialization		35	35	33	
B-11 Value of satisfaction	62	55	42	67	25
C-5 Influence of high school courses	20	40	50	20	
Factor VI - Material Value					
A-9 Prepare self to be successful	16	28	44	44	18
A-14 Live an easier life	47	49	39	47	45
A-22 Degree meant great deal		35	44	40	

(Table continued next page)

[b] See Factor A, Table 48.

[c] Combines with Factor V in freshman constant males.

TABLE 17 (Cont'd)

VARIABLES COMPRISING MAJOR FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
		Freshman survey		Senior survey	
	Dropped	males	females	males	females
Factor VI - Continued					
A-25 Raise my station in life	20	54	53	57	40
B-3 Value of practicality.	42		25	42	44
B-5 Value of security .	54	71	62	68	67
B-6 Value of potential income.	67	82	72	80	75
B-7 Value of independence.	46	52	18	45	44
B-8 Value of advancement	69	66	59	80	64
B-9 Value of easiest thing[1].		17		30	33
Factor VII - Altruistic Value					
B-2 Value of serving others.	43	37	60	32	55
B-12 Value of self-improvement	59	47	67	30	62
B-13 Value of parenthood.	36	60	67	47	66
B-14 Value of religion.	39	52	51	33	39
D-8 Interest in children and youth. .	18	28	28	27	31
Factor VIII - School Influence[2]					
A-2 Community leaders encouraged.	e	57	40	67	26
A-3 Teachers thought college material. . .	e	52	60	53	65

(Table continued next page)

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[1] Omitted from scale.

[2] Items C-9, Influence of college counselor and C-18, Influence of principal were omitted from analyses because of low popularity, but included in factor scale. See also Factor P.

[e] See Factor P.

TABLE 17 (Cont'd)

VARIABLES COMPRISING MAJOR FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
		Freshman survey		Senior survey	
	Dropped	males	females	males	females
Factor VIII - Continued					
C-3 Influence of high school teacher . . .	52	22	57	31	57
C-10 Influence of school counselor . .	60		38	40	42
C-11 Influence of tests.	30	16	46		56
Factor IX - Influence of Experience					
C-6 Influence of work experience		44	49		
C-14 Influence of movies and TV	46	40		52	40
C-15 Influence of people in field. . .	40	68	51	31	47
D-6 Interest in work with adults.	20	33		20	16
Factor X - Avocational Influence					
C-1 Influence of hobby	41^e	41^d	57	48	54
C-2 Influence of free time	56^e	24^d	33	60	54
Factor XI - Science Interest					
C-13 Influence of career day[3].		32		29	
D-4 Interest in machines	53	73	57	69	31
D-5 Interest in numbers.	66	67	51	71	61
D-9 Interest in science.	22	27	55	50	72
D-10 Interest in plants and animals .			51	17	64

(Table continued next page)

[d] Combines with Factor XI in constant freshman males.

[e] See Factor P.

[3] Omitted from scale.

TABLE 17 (Cont'd_

VARIABLES COMPRISING MAJOR FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
		Freshman survey		Senior Survey	
	Dropped	males	females	males	females
Factor XII - Humanities Interest					
D-7 Interest in music . .	54	63	62	69	17
D-11 Interest in art. . .	35	43	60	27	21
D-12 Interest in recreation.	52	38	26	29	65
D-13 Interest in travel .	38	30	32	27	44
Factor XIII - Verbal Interest					
C-17 Influence of reading	22	52	49	68	36
D-1 Interest in words . .	58	61	60	70	62
D-2 Interest in ideas . .	53	42	54	66	50
Factor XIV - Ability					
Ohio State Psychological.	25	61	64	68	63
Grade Point Average . . .	54	63	62	54	64

measured among seniors in retrospect and among a group dropped for academic failure. This is considered evidence for the construct validity of the factor scales.

These analyses permit clarification of the motivational structures behind educational decision. On an a priori basis items had been classified as reasons, values, interests, and influences. Factor analysis justified a further division of these classifications while retaining them to a considerable extent. Ability formed a fourteenth factor which did not include inventory items.

In naming the 13 factor scales it was realized that titles can be deceiving and ambiguous. The distinction between interests and values is not always clear (cf. Super, 1962). The reasons as grouped seem on inspection to be more specific and personal than the values. Leona Tyler in a personal communication has called attention to the amount of resemblance between her results (Tyler and Sundberg, 1964) with quite different methods and with different samples. She would class the influence factors (VIII, IX, and X) as choice strategies and group the reasons factors (II, III, IV) with values. Social Reason, Academic Value, Material Value, and Altruistic Value seem similar to some of Super's work values (1962) (O'Connor and Kinnane, 1961). The classification of motivations into material and altrusitic is consistent with the research on college populations of Goldsen et al. (1960). Parallels are apparent with Rosenberg's three value complexes--intrinsic (self-expressive), extrinsic reward (money, security) and people--or with Herzberg, Kausner, and Snyderman's (1959) extrinsic and intrinsic motivations. Conformity and Altruistic Value might be aspects of Riesman's other-directedness. Bidwell, King, Finnie, and Scarr (1963) propose that Spindler's (1955) conception of a traditional versus emergent value conflict in the American culture be extended to the reported determinants of undergraduate careers. The Vocational Reason and Material Value factors seem similar to their traditional, and Social Reason, Conformity, and Altruistic Value factors to their emergent category. However, Tyler's stress on individuality and Super's work values are considered more congruent with the present research than the simpler classifications proposed by Goldsen, Herzberg, Riesman, Spindler, or Rosenberg.

Background interviews with these graduating students reinforced the conception of an interaction in educational decision between at least four kinds of determinants--common, group, specific, and uncommon or idiosyncratic. Of the 11 subordinate factors which were identified 3 were clearly common across groups, 3 were sex-related, and 5 were unique to only one of the five samples. Thus factor analysis of a group's responses to a questionnaire may improve understanding of an individual's decision to enter college but only to a point.

In addition to concerns with generality and specificity, stability of the factor structures underlying college attendance was a matter of interest. When the college seniors retrospected about their motivations three years before, the same 13 factors emerged as had appeared on entrance. Even though, as shown in Chapter IV many individuals were inaccurate in recollecting single items, confidence is strengthened in the substantially of the major factors within groups.

Perhaps these factor analyses are sufficient to justify some speculations on the motivational structures in educational decision. For many college is primarily the path to a job and concomitant economic rewards. However, there are others who find gratification in the academic enterprise for its own sake, enjoying intellectual inquiry or the pursuit of interests in art, letters, and science. A number are attracted by social opportunities or simply conform to family pressures. Some heed the authority of the school: "With your grades or test scores, of course, you're going to college." Quite evidently, the possible combinations of these factors are large.

To what extent do these factor determinants generalize to other educational decisions? In the next chapter a number of the items from the college inventory are considered as determinants of preferred high school study program in factor analyses applied to three diverse groups. In the succeeding chapter the factor scales developed in this research will be applied to constant and inconstant students.

CHAPTER VII

FACTORS IN EDUCATIONAL DECISION AMONG PUBLIC SCHOOL PUPILS[1]

The structure of the reported determinants underlying educational decision among public school students is examined in this chapter. Three samples of public school students are selected for diversity and their responses to determinant items factor analyzed. Major factors, resembling factors in the college studies, are identified and factor scales formed. A number of subordinate factors are also identified.

Problem and Objectives

In general vocational interests and ability and more recently values have been assumed as major determinants of educational decisions below the college level (Chapter III). On a logical basis the reported determinants items in this series of studies have been classified as values, influences, and interests. The research reported in this chapter is concerned with exploring the structure of educational decision among public school students through factor analysis. Specific objectives are:

1. Identification of common factors. How do factors obtained in public school samples compare with factors obtained in college samples? Factor analysis should be a useful check on the more empirically derived classification systems; it might serve to integrate interest and value determinants with the less thoroughly studied influences and with selected personal and social characteristics; and the identification of factors should prove valuable to guidance and curriculum specialists and to developmental theorists.

2. Formation of factor scales. If there are major factors, factor scales similar to the college factor scales could be applied in studies of the public school students who were consistent and inconsistent in their plans. Comparisons with findings among college groups might then be facilitated.

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[1] John M. Digman assisted in designing the factor studies described in this chapter.

3. Identification of subordinate factors. The exploration of additional factors which for one reason or another had not been identified in the college studies might increase understanding of educational decision making.

It should be noted that because of an interest in common major factors and scales, comparability and generality is stressed in this research.

Procedure

Subjects

Three samples were selected to vary in heterogeneity, sex, educational level, locale, socioeconomic characteristics, aspirations, etc.

1. The Hawaii General sample included 300 males and females enrolled in the 9th grade at Dole Intermediate school, Honolulu. Although predominantly from lower-class urban neighborhoods, these adolescents represented a variety of national-ethnic and socioeconomic groups. They expressed a wide range of educational and vocational plans. Only 37 were interested in science as an educational specialization.

2. The Hawaii Science sample comprised 300 ninth grade males who were attending 36 intermediate schools throughout the state. These boys were selected on the basis that they anticipated with considerable certainty that they would enter the secondary science study program in the following academic year, that they planned to continue on into college, and that they were the children or grandchildren of immigrants from Japan. This was considered a highly homogeneous group.

3. The Oakland sample included 1,199 boys and girls who were beginning their senior year in high school. The subjects attended one of three urban high schools in Oakland, California. The population of one of these schools (McLymonde) was predominantly Negro in ethnic origin; the population of the other two schools (Oakland High, Oakland Technical School) included substantial numbers of children whose fathers were in professional or managerial occupations (Dole, 1965).

Variables

In the analysis of the Hawaii General sample 39 determinant items from What I Want to Do and six personal-social items were selected for analysis. In the Hawaii Science analysis there were 34 determinant items from the same inventory.

For the Oakland analysis, 47 items were determinants presented in Your Program and Your Future and 16 were personal-social characteristics.

Thus, in all there were 34 items worded identically but directed toward different educational decisions at different levels which were included in the two intermediate, one secondary and five college factor analyses. In selecting items for inclusion in each of the three factor analyses, wherever the proportion of agreement with an item approached zero or 100 per cent the item was dropped. In the case of the homogeneous Science sample five determinant items were excluded on this basis.

Factor Analyses

For the analyses iter-item correlation coefficients (phis) were computed for all possible pairs of the items. The three resulting correlation matrices were then subjected to factor analyses, using the facilities of the University of Hawaii's Statistical and Computing Center.

In the case of the analysis for the Hawaii General sample, applying varimax procedure, six factors exhausted virtually all covariance, leaving minimal residual correlations. Applying the same procedure to the Hawaii Science sample, five factors were found to account for the observed correlations. In the Oakland sample 21 factors were extracted.

Definition of Major Factors

The factors obtained for the three samples were matched with one another according to general procedures used in the college study.

1. Select a college factor (Chapter VI) and note items which had been included in the three public school analyses.

2. Find a factor in the Oakland sample and note items with loadings of .30 and above corresponding to the items in the college study.

3. Continue matching factors in Hawaii General and Hawaii Science samples.

4. Review factors in each sample for items with loadings from .15 to .29.

If possible each item was assigned to but one factor by inspection on the bases that the item loaded higher on that factor than on any other within at least one of the three samples and the item had a loading of .30 in one sample or a loading of .15 or above in two out of three samples. In difficult instances logical considerations were applied in the final decision on item assignment.

When available, loadings on the personal-social items were inspected as an aid to interpretation. Names were given to the eight major factors yielded by this procedure on the basis of the schema developed for the college factors. Finally, the item content was reviewed by consultants.

Formation of Factor Scales

Seven factor scales were defined which, with two exceptions, were independent (nonoverlapping) and which were parallel to seven of the college scales. One major factor was not used as a factor scale because only two items met standards of eligibility.

Subordinate Factors

Subordinate factors were those which remained after the major factors had been identified. Each subordinate factor was named on the basis of the logic of its item content.

Results

Major Factors

The results of the three factor analyses are presented in detail in Appendix II. By following the matching procedure the 34 items were allocated among eight major factors and additional items among various subordinate factors. The major factors were titled Conformity, Academic Value, Material Value, Altruistic Value, School Influence, Influence of Experience, Science Interest, and Humanities Interest.

Item content of the major factors among the public school samples in four instances included only items from the college factors; in two instances items from two college factors were combined; and in two instances an item was included which did not parallel its assignment to a college factor. Sixteen items loaded significantly on comparable subfactors in all analyses at both public school and college levels.

Within the Hawaii General sample one (II) of the six subfactors extracted showed loadings on items which were allocated among four different major factors and two factors (I and IV) accounted for the remaining four major factors. In the more homogeneous Hawaii Science boys, items loading on four of the five subfactors extracted (II, III, IV, and V) were divided among eight major factors. In the Oakland sample, items loading on six subfactors were assigned to seven different major factors. A sixth factor (xviii) was found to load on two major factors (III, XVIII). Thus the intermediate school samples showed fewer major factor structures than the high school seniors and college students.

Of the personal and social variables introduced only one (male) was identified as a major component of a major factor. In the Hawaii General analysis the male characteristic had a loading of .76 on Science Interest.

Factor Scales

Seven of the eight major factors were formed into factor scales (Table 18). The two-item factor, Humanities Interest, was not treated as a scale. In the final schedule all of the public school factor scales included at least one variable with significant loadings on comparable factors in the three public school and five college analyses.[1] Two items were included in two different public school scales.

Subordinate Factors

Six subordinate factors were identified with loadings in the three public school analyses (Table 19). These were named Sex Role, College-Bound, Uncertainty, Non-Science, Economic Security, and Interest in Adults. Nine subordinate factors with loadings only on Oakland items were also identified.

Discussion

Major Factors

When the results of the Oakland analysis were introduced and a matching forced between results of the two 9th grade analyses and all other findings, the obtained structure seemed to ring true. Except for Conformity the original classification into influences, values, and interests was justified but could be further subdivided. The distinction between Material and Altruistic values, as pointed out in previous chapters, has been noted frequently in American culture. It seems reasonable that some students would prize the intrinsic satisfactions in education as represented by Academic Value. Influences can be divided into, first, the officials and

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[1] On Factor IX, influence of movies loaded on only four of five college analyses.

TABLE 18

ITEMS SELECTED FOR SECONDARY FACTOR SCALES AND THEIR LOADINGS ON HAWAII AND OAKLAND ANALYSES

Item	Hawaii loading		Oakland loading	College factor
	General	Science		
Factor III - Conformity				
Value of prestige . . .	-30 II	-29 IV		III
*Influence of parents. .	-40 II	-60 IV	-27 XVIII	III A
*Influence of relatives.	-35 II	-29 IV	-37 XVIII	III A
Factor V - Academic Value				
Influence of classes. .	-39 II	-32 V		V
Value of aptitude . . .	-34 II	-50 V		V
*Value of specialization	-39 II	-30 V	-22 XIX	V
*Value of satisfaction .	-47 II	-41 V, 42 III	-26 XIX	V
Interest in words . . .	-32 II			XIII
Interest in ideas . . .	-31 II	33 III	-26 XIX	XIII
Factor VI - Material Value				
Value of practicality .	-45 II		20 VII	VI
*Value of security . . .	-30 II	-27 V	31 VII	VI
*Value of potential income	-45 II	-16 V	51 VII	VI
Value of independence .	-43 II		21 VII	VI
*Value of advancement. .	-43 II	-30 V	40 VII	VI
Factor VII - Altruistic Value				
*Value of serving others	-45 IV	26 III	17 XVI	VII
*Value of self-improvement	-29 IV	47 III	19 XVI	VII
*Value of parenthood . .	-23 IV	42 III	28 XVI	VII
*Interest in children and youth	-37 IV		44 XVI	VII
Factor VIII - School Influence				
*Influence of teacher. .	-19 II	-32 II	-20 XVIII	VIII
Influence of counselor.		-61 II	-22 XVIII	VIII
Influence of tests. . .	-38 II			
Influence of career day	-26 II	-61 II		XI

(Table continued next page)

Note.--Loadings below 15 not reported in this table. Decimal points omitted. Roman numbers and titles of factors in headings based on college scales. Roman numbers to right of each loading identify factor obtained in subanalysis. (See Appendix II.)

*Significant loading, on all factor analyses.

TABLE 18 (Cont'd)

ITEMS SELECTED FOR SECONDARY FACTOR SCALES AND THEIR LOADINGS ON HAWAII AND OAKLAND ANALYSES

Item	Hawaii loading		Oakland loading	College factor
	General	Science		
Factor IX - Influence of Experience				
Influence of work experience	-23 IV			IX
Influence of movies, and TV	-26 IV	48 III	33 XIII	IX
Influence of people in field			28 XIII	IX
Value of independence.	-20 IV	58 III		VI
Value of self-improvement.	-29 IV	47 III		VII
Interest in work with adults	-27 IV	32 III		IX
Factor XI - Science Interest				
*Influence of hobby . .	32 I	33 III	-33 XIV	X
*Influence of free time		44 III	-30 XIV	X
Interest in machines .	56 I	34 III		XI
*Interest in numbers. .	19 I	-38 V	-19 XIV	XI
*Interest in science. .	28 I	-33 V	-41 XIV	XI
Interest in plants . .	15 I		-46 XIV	XI

TABLE 19

VARIABLES COMPRISING SUBORDINATE FACTORS AND THEIR LOADINGS ON HAWAII AND OAKLAND ANALYSES

Item	Hawaii loading		Oakland loading	College factor
	General	Science		
Factor A - Sex Role				
Male	.76 I	[a]	-36 XVI	[a]
Interest in machines . . .	56 I	34 III	-16 XVI	XI
Interest in children and youth.	-47 I	[a]	44 XVI	VII
Influence of hobby	32 I	33 III	38	X
Interest in food	-29 I	[a]	XVI	[a]
Value of parenthood. . . .		42 III	28 XVI	VII
Interest in words.	-29 I	20 III	15 XVI	XIII
Interest in science. . . .	28 I	21 III		XI
Interest in plants, animals	15 I	28 III		XI
Interest in art.	17 I	50 III		XII
Interest in music.		35 III	17 XVI	XII
Interest in work with adults		32 III	16 XVI	IX
Interest in work with ideas		33 III		XIII
Value of satisfaction. . .		42 III		IV
Value of independence. . .		58 III	15 XVI	VI
Value of income.	18 I	28 III		VI
Value of security.	16 I	23 III		VI
Influence of movies, TV. .		48 III		IX
Influence of work experience	23 I	20 III		IX
Influence of free time activities		44 III		X

(Table continued next page)

Note.--Criteria for inclusion in this table: 30 on one survey or 15 on two surveys. Decimal points omitted. Roman numbers to right of each loading identify factor obtained in subanalysis (see Appendix II).

[a] This item not included in analysis.

Note.--The following factors were obtained in the Oakland analysis only. Most included items not used in the other studies:

Economic disadvantage (V).--Father completed 13 or more years of school -49; father employed in white collar job -49; father born in USA except South -37; attend McClymonds High School 34; college study program -24; plan on college after high school -17.

TABLE 19 (Cont'd)

VARIABLES COMPRISING SUBORDINATE FACTORS AND THEIR LOADINGS ON HAWAII AND OAKLAND ANALYSES

Item	Hawaii loading		Oakland loading	College factor
	General	Science		
Factor B - College Bound				
Planned on college after high school	54 III	a	56 XX	a
Preferred science college high school study program	51 III	a	a	a
Preferred college study program	a	a	58 XX	a
Anticipated changing very little or not at all in ideas about "what you will like to do 10 years from now.".	38	a		a
Interest in science . . .	28 III	a	19 XX	
Influence of friends. . .	-30 III			III
Science profession as goal	a	a	31 XX	a
Father employed white collar job.	a	a	20 XX	a
Factor C - Uncertainty				
"Sure" or "Sure, but may change my mind about study program	-48 V	a		a
Interest in food.	39 V	a	-15 VI	a
Influence of random choice	31 V	a	-27 VI	a
Value of fastest path to diploma		a	-41 VI	a
Value of easy courses . .		a	-40 VI	a

(Table continued next page)

Footnote (continued)

Native Son (VIII).--Value of achievement -47; lived in state 16 or more years 41.

Inventory Avoidance (IX).--Influence of some other reason not given here -44; influence of some other value not given here -36; influence of some other interest not given here -40.

Inventory Resistance (XV).--Influence of none of the above 40; value of none of the above 40; value of none of the above 27; interest in none of above 55; influence of hobby -33.

TABLE 19. (Cont'd)

VARIABLES COMPRISING SUBORDINATE FACTORS AND THEIR LOADINGS ON HAWAII AND OAKLAND ANALYSES

Item	Hawaii loading		Oakland loading	College factor
	General	Science		
Factor D - Avocational Interest				
Interest in art	-21 II	50 III	-42 IX	XII,F
Interest in music	-25 II	35 III	-35 IX	X
Influence of hobby. . . .		33 III	-35 XIX	X
Interest in ideas	-31 II	33 III	-26 XIX	XIII
Value of satisfaction . .	-47 II	42 III	-26 XIX	IV
Value of self-improvement	-31 II	47 III	-16 XIX	VII
Value of specialization .	-39 II	29 III	-22 XIX	IV
Influence of free time activities.	-15 II	44 III	-25 XIX	X
Influence of teacher. . .	-19 II	17 III	-25 XIX	VIII
Factor E - Anti-Science				
Professional occupational goal in other than science.	[a]	[a]	54 X	[a]
Professional occupational goal in science	[a]	[a]	-50 X	[a]
Interest in words	-32 II	-117 I	29 X	XIII
Interest in science . . .	-31 II	[a]	-24 X	XI
Interest in music	-25 II	64 I	20 X	XII
Interest in art	-21 II	75 I		XII

(Table continued next page)

Footnote (continued)

Guidance (I).--High school helped "a great deal" or "more than enough" in choosing study program -35; influence of intermediate school classes in program choice -36.

Early Decision (III).--Chose high school program upon entering grade 10 -26.

Specialization (XVII).--Changed "very little" or "not at all" in ideas about "what you would like to do 10 years from now." -33; valued preparation for specialization -31.

Value of Independence (II).-- -30.

Influence of Work Experience (IV).-- 40.

TABLE 19 (Cont'd)

VARIABLES COMPRISING SUBORDINATE FACTORS AND THEIR LOADINGS ON HAWAII AND OAKLAND ANALYSES

Item	Hawaii loading		Oakland loading	College factor
	General	Science		
Factor F - Security				
Value of security	37 VI	-26 II	-21 XII	VI
Influence of career day. .	-33 VI	-61 II	-18 XII	XI
Value of income.	20 VI	-15 II		VI
Value of advancement . . .	21 VI	-49 II		VI
Interest in work with adults	18 VI	-17 II		IX
Value of self-improvement.		-33 II		VII
Value of parenthood. . . .	24 VI	-22 II		VII
Interest in numbers. . . .		52 II	-30 XII	XI
Interest in music.		-34 II		XII
Influence of tests . . .			-41 XII	VIII
Value of aptitude for program.			-40 XII	VIII
Japanese ancestry. . . .	27 VI	a	a	a
Factor G - Interest in Adults				
Interest in adults . . .	-17 V	32 III	40 XXI	IX
Influence of teacher . .	-20 V	17 III	17 XXI	VIII
Interest in ideas. . . .	[illegible]	33 III	25 XXI	XIII

Footnote (continued)

Chose High School Programs Upon Entering Grade 10 (III).-- -36.

Study Program Chosen "by me and others," chosen "for me" or "I had no say at all" (XI).-- -43.

planned events (School Influence), and secondly, the more casual, vicarious events (Experience). Interests are reclassified as Science and Humanities. Finally, Conformity (other directedness?) probably represents the pattern of those who admit that they make their decisions as they think is expected of them. These eight factors emerged most clearly of the various subfactors in the diverse samples and were independent in structure of social-personal variables (except for the link between Science Interest and male sex affiliation). Confidence in these basic structures behind educational decision is strengthened by the resemblance to other factor studies on other populations involving the determinants of related decisions. The comparisons with analyses by Super (1962), Tyler and Sundberg (1964) as well as with related research by Spindler (1955) and Goldsen *et al*. (1960) were made in preceding chapters.

Interpretation of these factors should be limited, however, by recalling that the Type I error in design was deliberately introduced. As the price for identifying factors of maximum potential generality some valid and important additional factors in educational decision have probably been sacrificed. If more items, or items sampling other important motivations had been included, no doubt further important major factors would have emerged. It will be recalled that the Reasons part of the college inventory was included after *What I Want to Do* and its corollary had been developed and that these additional items accounted for four new major factors in the college study.

Another limitation is that items relating to the college decision may have been overrepresented in the inventory. Interviews and open-end techniques, first applied in pilot studies to 6th and 9th grade samples and to college freshman, shaped the construction of *What I Want to Do* (Dole, 1961). A number of items were omitted which were later identified as pertinent at the secondary level and were introduced in *Your Study Program and Your Future*, just as more items pertinent to the college level were added to *Reasons for Going to College*. Since they were not presented to all samples, the added items formed the supplementary factors. It is, of course, not known how many of the supplementary factors would have appeared as additional major factors if the determinant items comprising them had been presented at all educational levels.

Within the intermediate samples for the determinant items selected to form major factors only three subfactors accounted for all loadings. Thus in the Hawaii General sample Factor II combined influences, values, and reasons; Factor IV influences and values, and III influences and interests. A tentative explanation, disregarding for purposes of this discussion the possibility of artifacts in measurement, is that for most intermediate students the determinants of an unconsummated educational choice are fairly vague. With secondary school and post-high school come the distinctions--the separation into clearer categories. It may be that, as the young person develops, the necessity for choice, for commitment to a particular specialization in high school, forces him to pattern his values, interests, and influences more logically. Whether these forced patterns are premature or artificial is another issue.

Factor Scales

One purpose of the research described in this chapter was to construct factor scales which would be applied, using multivariate techniques, in the comparison of consistent and inconsistent samples. By forming scales which were similar to the college scales rough comparisons across educational levels might also be facilitated. The seven scales which were formed for application to the public school samples were intended to meet minimum standards for application to large samples. It was possible to match 32 items fairly closely with the college scales; 16 of them loaded significantly on similar factors in all eight factor analyses. Except for sex affiliation, the underlying factor structures were independent of the personal and social characteristics selected for analysis; they appeared in heterogeneous samples, including the high school seniors from California; the items comprising the public school scales were scored by a different method (check list) from the college scales (Likert) and the interrelationships were measured by phi rather than product-moment correlation. The constructs measured by these scales, then, should have considerable generality. Their stability in various samples will be reported in a subsequent chapter.

Subordinate Factors

Consideration of the subordinate factors (Table 19) yielded by these procedures is valuable not only in suggesting possible additional scales but also in extending the picture of the educational choice domain. Factor A, Sex Role, confirms the powerful role of sex affiliation in educational decision (Dole, 1964b) and supports the point, previously based on comparisons between item hierarchies and item popularities, that males differ more from females in interests than in values and influences.

An extremely important conclusion in terms of the overall emphases of these studies is suggested by Factor B, College-Bound. Apparently, of all determinant items, only Science Interest, accounts for the factor structure of college intention. The other items with high loadings on this factor are all personal-social characteristics similar to those background characteristics which have been associated with college attendance in other studies. (See Chapter III.) College-Bound students were most likely to be found in college preparatory study programs, to express scientific professional goals, and to be the children of college educated fathers in white collar jobs and they were less likely to be Negroes.

Factor C, which has been titled Uncertainty, seems congruent with a clinical impression of educational alienation peculiar among certain adolescents who rarely persevere to college. Four of the five items were excluded from the college factor analyses because they failed to meet minimum standards of popularity, that is, few college students rated them as important in deciding to attend college.

Major Factor D, Avocational Interest, combines the two items of the college avocational interest factor (X) and two from the Interest in Humanities factor with a miscellany of other items. It was decided not to form these items into a scale for use with the public school samples because its components seemed ambiguous. One may infer, tentatively, that distinct interests in the arts do not emerge as determinants of educational decision until after high school. A longitudinal study of the development of educational specializations in the fine arts, although beyond the scope of this investigation, might show how before high school abilities and interests are encouraged by teachers and tested through cocurricular activities and hobbies.

Factor E seems to represent an interest in non-scientific. Among science committed boys a distinction between verbal and humanities interest was reflected in intermediate school; among Oakland seniors a difference in professional goals in science and in other fields was associated with a distinction between science determinant interests and other interests. However, this supplementary factor may have emerged as an artifact in part of varying procedures in treating science-related items when constructing instruments, selecting samples, and dichotomizing options. The fact that all loadings on subfactor II in the Hawaii General sample are in the same direction suggests that the differentiation of science, humanities, and verbal interest determinants may occur when (not necessarily because) students must choose related pre-vocational specializations.

Factor F, Security, is difficult to interpret. Besides the association with other values in the major factor, Material Value, the item may carry somewhat different connotations as a reason for educational choice in various populations. It might be noted that observers have frequently commented on the emphasis Hawaii's Japanese place on economic security. Factor G, Interest in work with adults, may represent an endorsement by public school children of determinants which are consistent with conceptions of approaching maturity.

Twelve subfactors, were unique to the Oakland analysis and require interpretation in terms of the special conditions of that survey (Dole, 1965). In almost all instances the items with significant loadings were not presented to the other samples.

In the Oakland study items were introduced to test the relation of economic disadvantage, Negro racial status, and opinions about guidance procedures in program selection, time of study program decision and years of residence in state to the factorial structures underlying educational decision. Except for the college-bound factor, most of these items were not linked to items used in the other analyses. Most were independent of the major factors.

A number of these personal-social items deserve consideration in this discussion. Observation had suggested that race might be associated with determinant factor structure. The variable, McLymonde High School, indicated high probability of Negro ethnic origin and associated low socioeconomic status. This item received its highest loading on Oakland v (34) assigned to Supplementary Factor B, College-Bound; Oakland viii (-16) titled Native Son; and Oakland xi (-25) titled Program Dependence. In other words, apparently Negro students in this sample were less likely to respond favorably to items associated with college intention, less likely to be born in the state, more likely to express a desire to get ahead and more likely to feel that they were placed in an educational program rather than choosing it for themselves. (This interpretation is supported by an item analysis comparing the three Oakland High Schools in Dole, 1965.)

The relation of reported program change to the factorial structure is also interesting in view of the design and objectives of this research. This item had its highest loading on Oakland iii (-23) titled Early Decision, and on Oakland xi (-16), titled Program Dependence. Those students who maintained their secondary programs throughout high school made the decision early and independently but apparently relied upon the same factorial structure as those who reported they had changed their programs.

Father's occupation was also introduced only in the Oakland matrix. Replies to 81 options were dichotomized by the investigator between professional and all other parental occupational titles. (See supplementary report by Dole, 1965, for a detailed description of the classification procedure.) This variable loaded highest on Oakland v (-49) and xx (20) both of which were grouped with Supplementary Factor B, College-Bound.

In conclusion, the three factor analyses of public school samples have provided some basis for the assumption that certain decision structures before college, although perhaps more primitive, resemble those which contribute to college attendance. With the seven factor scales it will be possible in a study reported in Chapter IX to compare consistent public school students with inconsistent students and to relate the results, roughly, to comparisons of college populations. The findings about educational decision based on the subordinate factors will be especially valuable in interpreting the relation of personal and social variables to motivational processes.

CHAPTER VIII

CONSTANT VERSUS INCONSTANT COLLEGE STUDENTS[1]

Constant college students are compared with students in various inconstant categories in this chapter. Information obtained from university records and surveys is used to form groups classed as Failed, Transfer, Withdrew, Delayed, and No Record (discontinued). Selected personal and social characteristics are related to follow-up status before scores on the factor scales of Reasons for Going to College are analyzed. Results provide the basis for a reexamination of the relation between academic motivation, persistence and attrition.

Problem and Objectives

It is well established that ability, first semester academic performance and their correlates are associated with student survival in public higher education (Sanford, 1962). Motivation appears also to determine constancy. The dropout or flunkout who attributes his departure from college to lack of interest is so common as hardly to require documentation. However, Iffert (1957) was unable in his national sample to relate academic motivation to college persistence and attrition. But in Chapter IV doubt was cast on Iffert's conclusions because of his dependence on single items and logical scales and his ex post facto design. The present study is intended as a more rigorous test of the relation between reported reasons for attending college and constancy in higher education. In addition, it seemed desirable to investigate the relation of selected personal and social variables, educational-vocational plans, attitudes and ability to status on follow-up three years after matriculation.

When entering college students are classified into constant and several inconstant groups on the basis of objective evidence about their status three years later, the following general questions may then be posed about the responses of these groups to the freshman survey (Chapter IV): (a) How are selected personal-social characteristics (national-ethnic background, father's occupation, father's educational level, residence, sex) related to status on follow-up; (b) how are educational-vocational plans (anticipation of transfer, of graduate study, undergraduate college preference) and attitudes about plans (confidence in choice of specialization and in graduating) related to status on follow-up; and (c) how do constant students compare on motivational factor scales with those who failed, withdrew in good standing, transferred, dropped out for unknown reasons, or had been delayed in attaining senior standing at the university; can patterns of constancy or congruence be identified on any of the factor scales?

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[1] I am very grateful to Walter Yee, Joseph P. O'Reilly and David J. Weiss for their assistance in executing the data analyses reported in this chapter.

Procedure

Sources of Data

In order to classify the entering freshmen into constant and inconstant groups and to integrate selected antecedent variables for analysis data were utilized from three sources.

1. The 1960 freshman survey inventory provided responses to characteristics, plans and attitudes items and scale scores derived from Reasons for Going to College (Appendix I). The administration of the survey and evidence about item reliability and validity of Reasons for Going to College were described in Chapter IV. As described in Chapter VI, this instrument provided scores for 13 factor scales.

2. The University of Hawaii Office of Admissions and Records made available the official permanent records of the institution for this investigation. For all subjects grade point ratio after one semester was obtained. All persons who withdrew before completing the fall semester, 1960, were assigned a value of 0.00. The Ohio State Psychological Examination (OSPE), Form 25, had been administered to applicants by the Admissions Office before 1960 registration. Total raw score was used as a measure of general ability. Follow-up status was determined by a person-by-person search of the permanent student records. From these records it was possible to identify all those who were still registered as students, including subjects who had not submitted senior survey forms. Among those who were no longer attending the University of Hawaii, their records indicated the number of semesters completed, if they had been dismissed for academic reasons, if they had requested that transcripts be forwarded to another school or if another college had requested information. Over the period of this research the Records Office has systematically and carefully solicited and recorded evidence about transfer by former students. Also included in the permanent records were the last official address and telephone number of those who were no longer students.

3. After pretesting, a post card follow-up form (See Appendix I) was mailed in October 1963 to all those who were no

longer attending the University of Hawaii, who had not been dismissed for academic failure, and for whom a usable address was available. In March 1964, non-respondents were again solicited, this time with a personal letter accompanying the survey form. Those who did not reply to either mailing were called individually at their last local address if a telephone was listed in university records. In a few instances family members supplied the addresses of former students who had left the state and served as informants about current status. Of 317 former freshmen who left the University of Hawaii in good standing, 70 per cent returned survey forms or were reached by telephone, 16 per cent were "lost" (no record or mailing returned by post office), and 14 per cent did not reply.

Formation of Follow-up Subject Pool

Before the final definition of membership in constant and inconstant groups, each of the 1,792 entering students (95 per cent of official figures) who had participated in the survey at fall registration 1960 was classified according to his status in fall 1963 on the basis of all available information as described under sources of data. As shown in Table 20, of every nine entering students approximately three failed before their senior year, three were still in school and eligible to graduate in 1964, one was still in school but had not yet attained senior standing, one had transferred to another college, and one had discontinued his education in good standing.

The follow-up subject pool served as a source of subjects for various analyses. Subject groups and subgroups are described in the following paragraphs.

Withdrew. This group consisted of 104 members who had discontinued higher education in good standing, were not now in any school, and were known to be working, a housewife, in military service or unemployed. Most popular reasons for withdrawal were not realizing goal, marriage, and lack of funds (Table 21). Only 11 checked the option, "preferred another school," as among reasons for not continuing at the University of Hawaii. Sixty-two in this group had completed no more than two semesters. Median OSPE was 76, close to the published mean for state university students and for University of Hawaii entering freshmen in 1960. Median grade point ratio of those who finished one semester was 2.1, slightly better than the university average.

Delayed. There were 246 students who were attending the University of Hawaii in fall 1963 but had not yet attained senior status. Median OSPE was approximately one-third of a standard deviation below the published mean; first semester grade point ratio averaged 1.8. On the basis of observation, selected interviews and inspection of records, it is concluded that withdrawal for various

TABLE 20

STATUS OF 1960 FRESHMAN SURVEY PARTICIPANTS IN 1963

Status in 1963	Number	Per cent
Failed. Dismissed for academic reasons	578	32.3
Member of senior class. Completed senior survey.	520	29.0
Still attending University of Hawaii, but had not yet attained senior status.	246	13.7
Transferred to another institution. Withdrew in good academic standing	131	7.3
Discontinued education. Returned follow-up form.	104	5.8
Discontinued education. Did not return follow-up form.	82	4.6
Member of senior class. Senior survey form incomplete or discarded	70	3.9
Never consummated 1960 registration. No University of Hawaii record or usable address	46	2.6
Not member of freshman class in 1960.	12	0.7
Graduated	3	0.2
All participants.	1,792	100.1

TABLE 21

REASONS FOR WITHDRAWING FROM UNIVERSITY OF HAWAII OFFERED BY TRANSFER AND DISCONTINUE GROUPS

Reasons for Withdrawal	Transfer		Discontinue	
	N	%	N	%
Preferred another school	79	67.5	11	10.6
Not realizing my goals	5	4.3	31	29.8
Some other reason	23	19.7	19	18.3
Marriage	2	1.7	27	21.2
Lack of funds	4	3.4	18	17.3
Not really ready for college	3	2.6	12	11.5
Personal	9	7.7	9	8.7
Not really interested	3	2.1	11	10.6
Wanted to be independent	11	9.4	6	5.8
Seemed to lack ability	1	.9	5	4.8
Illness	1	.9	5	4.8
Parents left Hawaii	7	6.0	1	1.0
Number of respondents	117		104	
Number in group	131		186	

Note.--Percentages based on N of respondents. Totals exceed 100.0 since more than one reason permitted.

personal reasons and return (maternity, employment, military service, illness), failure followed by readmission on probation, and a minimum academic load because of economic obligations or fear of failure accounted for most of those in this group.

Transfer. For 131 entering students there was clear evidence that they were attending another college at the time of the senior survey. Of those returning the follow-up form (Table 21) two-thirds indicated that they had withdrawn from the University because they preferred another school; all reported that they were studying at the time of the survey. Sixty-five had transferred by the end of the freshman year and 58 after their third or fourth semester. All had been in good academic standing. Median grade point ratio after one semester was 2.2 and median OSPE 82.

No record. Of those students who participated in the 1960 survey, 143 had in common the fact that available records were incomplete (no follow-up form, no senior survey, or no evidence about transfer or academic failure) and that they were no longer attending the University of Hawaii. These 143 subject were grouped together for the analyses of selected characteristics if they discontinued education for unknown reasons, were dismissed for nonacademic reasons, never consummated 1960 registration, were apparently not freshmen in 1960 or had graduated by fall 1963. For the analyses of factor scales subjects in No Record follow-up status were reduced to those who were known to have discontinued higher education in good standing but who did not return the follow-up form. Of the 143 only 20 had completed more than two semesters. For the 77 who had completed at least one semester, median grade point ratio was 2.1. This group may have included some persons who later transferred to other colleges, if transcripts were not requested or if their colleges did not notify the Records Office. Median OSPE was 78.

In school. The 70 subjects were treated as a separate group who were constant from freshman to senior year but whose senior survey forms were incomplete or unusable. Median on OSPE was 80 and fall, 1960, grade point ratio 2.3. This group was not included in the analyses by factor scores because of its small size.

Failed. Five hundred seventy-eight members of the 1960 entering group subsequently were dismissed for academic reasons. During the time of this study students were subject to dismissal if in any semester they earned more credits of F than D or above, if their cumulative grade point ratio was below 1.5 after two semesters or below 1.8 after four semesters. Of these subjects, 431 had completed fewer than three semesters. Median on OSPE at admission was 68, lowest of the seven groups and approximately one standard deviation below published means for state university freshmen. Among those who established a record, median grade point ratio was 1.2. Subjects who failed and transferred to another college were placed in this group but subjects who failed, and returned to the University of Hawaii were classed as Constant, Delayed, or In School depending upon the number of credits earned and surveys completed. The males in this group were used to cross-validate the factor scales as described in Chapter VI.

Constant. These were the same 520 students whose responses to the 1960 survey and 1963 survey were examined for stability as reported in Chapter IV and factor analysed as reported in Chapter VI. All had attained senior status without interruption of academic standing. For the analyses of factor scale scores only subjects were selected who were consistent as well as constant from freshman to senior year in college. That is, they maintained the same college affiliation in both surveys. Mean OSPE for males was 83 (53 percentile of published norms) and for females 87 (57 percentile), close to the mean for state university freshmen. After one semester, the males had earned a mean grade point ratio of 2.5 and the females 2.4.

In sum, rigorous, objective criteria were used to form the Constant, Withdrew, Transfer, and failed categories. Less information was used in specifying the criteria for membership in Delayed, No Record, or In School classifications. It would seem logical, however, that the No Record group should be most similar to the Withdrew group and the In School group resemble the Constant group.

Constancy and Congruence Defined

On the basis of the manner in which the groups were formed they were placed on a continuum from constancy to inconstancy. It was judged that they should be ordered thus:

Constant Transfer Failed Withdrew
In School Delayed No Record

Constancy Inconstancy
in educational progress

It was specified that if a factor scale were associated with constancy in some systematic manner, scores obtained by the several follow-up groups would tend to conform to the above hierarchy.

Congruence was defined as an agreement on scale score between a sample and all subjects of the same sex and college. It was then also specified that if constant samples were more congruent on a scale than were inconstant samples, this would mean that within the same college and sex constant samples would tend to show more agreement with all subjects of the same sex and college than inconstant samples. As this was an exploratory study no hypotheses were made about constancy and congruence in relation to the factor scales.

Data Analyses

Data from all sources were punched on IBM cards (three cards per S). To analyze the relation of selected characteristics to status on follow-up for each characteristic, scatter plots were cast, chi square was applied to the contingencies and C calculated as an approximate index of the extent of relation between noncontinuous variables. When sex differences were apparent in the characteristics variables, males and females within each follow-up group were treated separately.

Before comparing Constant group on the factor scales with the various inconstant groups, as previously indicated the inconsistent subjects were dropped and the In School group was discarded. Within the six remaining groups, samples were drawn to control for sex and college as it was known that reported determinant items varied with educational position (Dole, 1961; 1964a) and with sex (Dole, 1964b). There were thus 18 male samples--six follow-up samples within three colleges (Arts and Sciences, Business Administration, and Engineering) and 18 female samples--six follow-up samples within three colleges (Arts and Sciences, Business Administration and Education). The size of available samples dictated choice of the colleges for analysis. (See Table 23a,b.)

On each of the 13 factor scales described in Chapter VI, standard deviations and reliability coefficients (Hoyt, 1941) were obtained separately in the 36 samples. Using regression procedures (Snedecor, 1946) variances were analyzed in a 1 x 18 design, applied on each scale to males and females separately. In addition, the effect of ability (OSPE) was tested in a multiple regression analysis on each scale of the 18 male samples and, separately of the 18 female samples. When R_{OSPE} was significant (t), adjusted means for each sample were obtained. The multiple regression analyses were executed on the 7040 computer at the University of Hawaii according to a program developed by W. F. Yee.

Because of the large amount of information available for each subject and the consequent possibility of error, individual scale scores were checked and means and standard deviations were verified on the 1604 computer at the Numerical Analysis Center at the University of Minnesota, using special programs developed by D. J. Weiss. Measures of internal consistency were also obtained. Additional multivariate analyses beyond the predefined objectives of this project report have also been initiated at the University of Minnesota. Pending the completion of these analyses, each matrix of means in which the 1 x 18 variance analysis reached significance was examined for patterns by sex, college, and follow-up status. It was reasoned that any pattern to be of consequence should appear in all comparisons. Means were inspected also for constancy and congruence.

Results

Selected Characteristics

Table 22 summarizes 21 contingency tables (Appendix III) like Tables 23a,b in which various characteristics, attitudes, and plans were cross-tabulated against status on follow-up. In these analyses seven non-continuous follow-up categories were treated as the dependent variable against the non-continuous options of each characteristic. The highest relationships were found with years of education in Hawaii and national-ethnic origin of father. Sex affiliation, college on entrance for females (Tables 23a,b) legal residence, generation in the United States, father's educational level, civilian employment status of father, and years of school attended in Hawaii were significantly associated with constancy.

Attitudes and Plans

Of the educational-vocational plans items, college on entrance for females (but not males), plans for transfer and plans for further education after graduation were significantly related to status three years after entrance. Two measures of attitude, sureness about intended field of specialization and sureness about graduating from college, were not related to constancy as measured.

Groups Described

By inspecting individual cells of the contingency tables (Appendix III) each follow-up status may be summarized in terms of significant personal characteristics and plans when compared with the proportions among all entering 1960 freshmen.

In the Constant group there were significantly larger percentages of students of Japanese ancestry, not planning to transfer, very likely to seek further education, long term residents of Hawaii, attended school in Hawaii 5 years or more, and proportionately more girls. There were smaller percentages of Caucasian and "other" ancestries, and fewer children of military personnel. Among the girls, there were proportionately more representatives of the third generation in the United States, more planning to enter the College of Education and fewer in Arts and Sciences. There were smaller percentages of males who did not know their generation in the United States.

Among those who Withdrew before senior year there were larger percentages of Caucasian ancestry, more, comparatively, who planned to transfer to another college, more with legal residence outside Hawaii and fewer who had attended school in Hawaii five years or more, as well as a smaller proportion of Japanese ancestry.

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TABLE 22

RELATION OF VARIOUS CHARACTERISTICS TO STATUS ON FOLLOW-UP BY MALE AND FEMALE SAMPLES

Characteristic	Sample	N	df	X^2	C
Years of education in Hawaii . . .	m & f	1,792	6	175.60**	.30
National-ethnic origin of father .	m & f	1,792	18	150.57**	.28
College on entrance.	f	874	24	70.96**	.27
Generation in USA.	f	874	18	64.28**	.26
Planned to transfer.	f	874	18	52.99**	.24
Planned on more education.	f	874	18	39.64**	.21
Generation in USA.	m	918	18	43.88**	.21
Legal residence.	m & f	1,792	6	72.46**	.20
Planned on more education.	m	918	18	35.60**	.19
Sex affiliation.	m & f	1,792	6	64.28**	.19
Planned to transfer.	m	918	18	31.95**	.18
Education of father.	m & f	1,792	30	57.70**	.18
Sureness about graduating.	m	918	18	24.36	.16
College on entrance.	m	918	18	21.92	.15
Occupational classification of father	m & f	1,792	30	40.19	.15
Sureness about field of study. . .	m	918	18	19.53	.14
Sureness about field of study. . .	f	874	18	17.79	.14
Sureness about graduating.	f	874	18	18.78	.14
Employment status of father. . . .	m & f	1,792	6	31.31**	.13
Year of high school graduation . .	m & f	1,792	6	10.62	.08
Would have preferred another curriculum	m & f	1,792	6	4.76	.01

*$P < .05$.

**$P < .01$.

TABLE 23a

COLLEGE ON ENTRANCE OF MALES BY STATUS ON FOLLOW-UP

"In which college have you been accepted?"	Status								X^2
	Withdrew %	Delayed %	Transfer %	No Record %	In School %	Failed %	Constant %	Total %	
Arts and Sciences . .	52.3	45.7	49.2	48.5	50.0	41.2	39.9	43.6	3.80
Business administration.	15.9	17.4	16.4	8.8	10.0	21.7	15.5	17.5	8.31
Engineering	25.0	32.9	26.2	32.4	35.0	29.7	32.5	30.8	1.72
Tropical Agriculture; Education; Nursing; General Studies . .	6.8	4.0	8.2	10.3	5.0	7.4	12.1	8.1	8.09
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
X^2 . .	1.40	3.06	0.90	3.80	2.37	4.81	5.58		21.92 (df=18)
N	44	149	61	68	40	350	206	918	

*P < .05.

**P < .01.

TABLE 23b

COLLEGE ON ENTRANCE OF FEMALES BY STATUS ON FOLLOW-UP

"In which college have you been accepted"	Withdrew %	Delayed %	Transfer %	No Record %	In School %	Failed %	Constant %	Total %	X^2
Arts and Sciences . .	40.0	42.3	52.9	48.0	30.0	45.7	24.8	37.6	15.31*
Business.	10.0	9.3	5.7	10.6	6.7	9.2	3.2	6.9	11.43
Education	36.7	33.0	28.6	36.0	43.3	33.3	57.0	42.2	26.37**
Nursing	5.0	4.2	4.3	2.7	10.0	6.1	10.2	7.0	9.47
Other	8.3	11.3	8.6	2.7	10.0	5.7	4.8	6.3	8.38
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
X^2 . .	2.04	8.38	8.48	7.99	1.50	10.31*	32.26**		70.96** (df=24)
N . .	60	97	70	75	30	228	314	874	

*$P < .05$.

**$P < .01$.

When those who were Delayed in their academic progress were considered, there were proportionately more of Chinese ancestry and fewer children of employed civilians than in the population as a whole.

Those who later were classified in the Transfer status anticipated this contingency in significantly larger proportions than their fellow freshmen. There were significantly larger percentages of Caucasians and children of professionally educated fathers; smaller percentages had completed five or more years of education in Hawaii. Of the girls, larger proportions represented the fourth generation or beyond in the United States and claimed residence outside Hawaii; smaller proportions than of all females expected to attend graduate or professional school.

In the No Record category there were more Caucasians and Filipinos, more children of skilled fathers and of fathers in military service than the proportions in the group as a whole. The percentages were smaller of those reporting that they were of Japanese national-ethnic origin or had attended school in Hawaii five years or more.

Subjects in the In School classification did not differ significantly from the entering class as a whole except that a larger proportion were children of professionally educated parents.

The Failed classification included proportionately more representatives of "other" ethnic groups (Hawaiian, part-Hawaiian, Filipino, don't know, no answer) and more children of military personnel. Approximately 60 per cent were male in contrast to an even division between the sexes on entrance. Of the females, larger percentages failed than all females who entered in Arts and Sciences and smaller percentages in Education. Of the males, fewer in proportion to all males planned on further education after graduation and more did not know their generation in the United States.

Reasons for Going to College

Table 24 presents the means on each of the 13 factor scales of Reasons for Going to College by status on follow-up for the three selected college male groups and the three selected college female groups. Standard deviations for each sample are reported in Appendix II. The results of the analysis of variance and the effect of OSPE upon each scale are also tabulated for the male and female college groups in Appendix II.

One scale, Material Value, reached significance in both male and female analyses. In the male groups, F values were significant

TABLE 24

FACTOR SCALE MEANS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College sample	Status						Significance	
	Withdrew	Delayed	Transfer	No record	Failed	Constant	F	OSPE
Vocational Reason								
Arts and Sciences . . . . m. .	2.56	2.78	2.76	3.00	2.81	2.79		
Business administration m. .	2.71	2.69	2.60	2.50	2.74	2.62		
Engineering. . . . . . . m. .	3.00	2.92	3.00	2.90	2.88	2.94	n.s.	n.s.
Arts and Sciences . . . . f. .	2.50	2.63	2.28	2.15	2.70	2.78		
Business administration f. .	2.83	2.89	2.50	3.00	2.52	2.57		
Education. . . . . f. .	3.00	3.00	2.84	2.88	2.94	2.95	**	**
Social Reason								
Arts and Sciences. . . . m. .	8.87	12.00	8.93	11.89	11.15	9.95		
Business administration m. .	7.29	11.46	10.60	11.40	11.83	12.83		
Engineering. . . . . . . m. .	10.90	10.41	11.60	14.10	11.82	9.94	n.s.	n.s.
Arts and Sciences. . . . f. .	10.33	12.34	9.58	8.21	10.93	10.34		
Business administration f. .	14.17	11.00	12.75	12.40	11.95	8.71		
Education. . . . . f. .	10.57	11.67	11.84	10.88	11.84	11.32	*	n.s.

(Table continued next page)

Note.--For each male and female set of 18 college samples significance of analysis of variance (F) and of effect of OSPE, is indicated in the right hand columns. See table, Appendix II.

*P $\leqslant .05$. **P $< .01$.

TABLE 24 (Cont'd)

FACTOR SCALE MEANS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College sample	Status						Significance	
	Withdrew	Delayed	Transfer	No record	Failed	Constant	F	OSPE
Conformity								
Arts and Sciences . . . . m. .	11.87	16.53	14.55	14.89	15.80	12.98		
Business administration m. .	8.57	18.08	19.10	15.40	16.80	16.21		
Engineering . . . . m. .	15.70	13.98	15.47	16.30	16.55	13.59	n.s.	n.s.
Arts and Sciences . . . . f. .	16.58	16.49	11.94	11.67	14.16	13.59		
Business administration f. .	21.17	13.89	19.25	14.80	16.95	11.86		
Education . . . . f. .	14.81	19.27	15.53	14.94	15.47	16.30	**	n.s.
Curiosity								
Arts and Sciences . . . . m. .	4.91	5.38	4.34	4.89	5.27	5.40		
Business administration m. .	3.43	4.85	4.20	5.80	4.83	4.55		
Engineering . . . . m. .	4.30	4.82	4.87	4.90	4.73	4.29	n.s.	n.s.
Arts and Sciences . . . . f. .	5.46	6.15	5.92	5.33	5.63	5.86		
Business administration f. .	4.67	3.33	7.00	5.40	4.76	4.71		
Education . . . . f. .	4.67	4.97	4.90	4.94	4.49	4.48	**	n.s.
Academic Value								
Arts and Sciences . . . . m. .	11.17	12.91	12.34	13.83	13.23	14.17		
Business administration m. .	9.57	12.08	11.60	13.20	12.18	12.10		
Engineering . . . . m. .	13.90	12.31	14.00	13.50	13.28	13.35	*	n.s.
Arts and Sciences . . . . f. .	13.29	13.24	12.42	11.06	13.11	13.25		
Business administration f. .	13.17	12.11	13.50	14.00	11.62	12.14		
Education. . . . . f. .	13.86	13.43	12.68	14.00	13.16	13.73	n.s.	**

(Table continued next page)

TABLE 24 (Cont'd)

FACTOR SCALE MEANS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College sample		Status						Significance	
		Withdrew	Delayed	Transfer	No record	Failed	Constant	F	OSPE
Material Value									
Arts and Sciences. . . .	m. .	17.87	22.09	20.17	21.94	21.69	19.17		
Business administration	m. .	22.00	24.04	23.40	21.00	22.72	23.34		
Engineering.	m. .	23.80	22.06	23.13	23.00	22.72	21.12	*	n.s.
Arts and Sciences. . . .	f. .	20.50	19.88	18.42	17.33	20.46	19.69		
Business administration	f. .	25.67	20.33	24.75	21.40	21.52	20.29		
Education.	f. .	21.57	21.93	21.58	21.19	20.71	20.98	*	n.s.
Altruistic Value									
Arts and Sciences. . . .	m. .	7.57	7.75	7.31	9.06	8.33	8.13		
Business administration	m. .	6.86	7.96	8.40	7.00	8.59	8.17		
Engineering.	m. .	7.60	7.78	7.53	9.40	7.59	6.67	n.s.	**
Arts and Sciences. . . .	f. .	10.29	10.78	9.42	9.42	10.92	9.39		
Business administration	f. .	9.33	8.11	8.75	10.00	8.71	6.71		
Education.	f. .	11.86	12.23	12.26	12.00	11.89	11.64	**	n.s.
School Influence									
Arts and Sciences. . . .	m. .	5.43	7.80	7.03	9.06	8.10	7.27		
Business administration	m. .	4.43	7.92	10.10	10.00	8.32	7.59		
Engineering.	m. .	8.70	7.76	9.40	7.60	8.63	7.45	n.s.	n.s.
Arts and Sciences. . . .	f. .	7.67	8.07	6.61	6.58	8.15	7.02		
Business administration	f. .	11.50	6.56	10.50	11.20	7.62	5.86		
Education.	f. .	8.19	9.67	6.68	7.69	8.66	8.51	**	n.s.

(Table continued next page)

TABLE 24 (Cont'd)

FACTOR SCALE MEANS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College sample		Status						Significance	
		Withdrew	Delayed	Transfer	No record	Failed	Constant	F	OSPE
Influence of Experience									
Arts and Sciences. . . .	m. .	3.65	4.33	4.03	5.17	4.80	3.89		
Business administration	m. .	3.57	5.00	5.90	6.00	4.99	4.79		
Engineering.	m. .	6.50	4.37	4.87	5.60	4.83	3.67	n.s.	**
Arts and Sciences. . . .	f. .	4.67	5.04	4.64	3.67	5.05	3.86		
Business administration	f. .	5.00	5.44	6.25	6.00	5.24	5.00		
Education.	f. .	5.33	5.63	4.42	5.50	5.41	5.66	*	n.s.
Avocational Interest									
Arts and Sciences. . . .	m. .	1.57	2.17	2.21	2.22	2.06	1.83		
Business administration	m. .	--	1.31	1.70	1.80	1.64	1.14		
Engineering.	m. .	4.00	2.22	2.60	2.00	2.32	2.16	*	n.s.
Arts and Sciences. . . .	f. .	2.12	2.17	1.72	1.15	2.05	2.10		
Business administration	f. .	2.17	1.67	0.75	1.40	1.52	1.14		
Education.	f. .	1.67	2.30	2.00	2.13	2.18	2.07	n.s.	n.s.
Science Interest									
Arts and Sciences. . . .	m. .	4.43	5.64	5.00	5.89	5.55	5.75		
Business administration	m. .	1.29	3.96	3.50	3.60	4.25	4.28		
Engineering.	m. .	7.70	7.73	8.33	7.20	7.22	7.49	**	n.s.
Arts and Sciences. . . .	f. .	3.33	2.93	3.14	3.03	3.58	3.12		
Business administration	f. .	4.50	3.78	3.25	1.80	3.62	4.00		
Education.	f. .	3.05	3.50	2.63	2.81	3.51	3.55	n.s	n.s.

(Table continued next page)

TABLE 24 (Cont'd)

FACTOR SCALE MEANS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College sample		Status						Significance	
		Withdrew	Delayed	Transfer	No record	Failed	Constant	F	OSPE
Humanities Interest									
Arts and Sciences. . . .	m. .	4.26	4.39	4.86	6.28	4.51	3.90		
Business administration	m. .	2.00	3.46	4.20	4.20	4.01	3.28		
Engineering.	m. .	3.30	4.10	3.53	4.70	3.76	4.22	n.s.	n.s.
Arts and Sciences. . . .	f. .	5.21	5.90	5.36	4.45	5.14	4.10		
Business administration	f. .	3.50	3.89	2.50	5.20	4.95	1.86		
Education.	f. .	4.52	4.90	5.74	6.25	5.63	5.27	n.s.	n.s.
Verbal Interest									
Arts and Sciences. . . .	m. .	4.78	5.59	5.17	6.50	5.31	5.97		
Business administration	m. .	4.29	4.61	6.10	6.40	5.25	4.93		
Engineering.	m. .	5.30	4.94	5.00	4.40	5.13	5.20	n.s.	n.s.
Arts and Sciences. . . .	f. .	5.38	6.44	6.22	5.45	5.89	5.95		
Business administration	f. .	5.50	5.22	5.00	6.20	5.24	4.57		
Education.	f. .	5.62	6.00	5.47	7.00	5.73	6.08	n.s.	n.s.
Number of Subjects									
Arts and Sciences. . . .	m. .	23	64	29	18	143	63		
Business administration	m. .	7	26	10	5	76	29		
Engineering.	m. .	10	49	15	10	104	49		
Arts and Sciences. . . .	f. .	24	41	36	33	104	59		
Business administration	f. .	6	9	4	5	27	7		
Education.	f. .	21	30	19	16	74	154		

on Avocational Influence, Academic Value, and Science Interest. The female samples differed significantly on Vocational Reason, School Influence, Social Reason, Conformity, Experience, and Altrusitic Value. Except for Vocational Reason the effect of ability was not significant in these matrices.

Follow-up Status

When the means of the six Constant samples on Material were compared with means of the same college sample by inspecting in turn the means within each of the five follow-up status categories, in one instance all differences were in the same direction. Each sample in the Delayed classification was slightly higher than its sex-college counterpart in the Constant category.

A similar inspection procedure was applied to the significant male and female matrices: Failed males were higher on Avocational Influence than Constant males. In the Delayed category, the female samples had higher means in all colleges than the female Constant groups on Conformity and School Influence and the male samples on Avocational Influence. In the Transfer follow-up status the females tended to rate Vocational Reason slightly lower than females of like college in the Constant category. Otherwise, samples in the Withdrew, Transfer, No Record, Delayed, Failed categories did not differ on inspection in any systematic fashion from those in the Constant status on any of the 13 scales.

College

Using a similar procedure, the data were next examined for scale patterns by college. That is, within the significant matrices of scale means, comparable patterns across follow-up categories were sought. Arts and Sciences females were lower than Education or Business Administration females on Material Value and Arts and Sciences males were lower than Engineering males. In each category, Arts and Sciences females were higher than Education females on Curiosity. Education females were high on Altruistic Value and Vocational Reason. Engineering males were high and Business Administration males low on Science Interest. Low means on Vocational Influence and Academic Value were associated with Business Administration among male samples.

Sex

When male groups were compared with female groups in the same categories, the males tended to be higher on Science Interest and the females on Altruistic Value. Girls in almost all samples were higher on Humanities and Verbal Interest.

Constancy and Congruence

When the scales were examined for hierarchies of means along the proposed constancy-inconstancy continuum, there were none which were similar across colleges within the significant matrices. However, two congruent patterns were identified: (a) Inconstant female entrants in Business Administration tended to have higher scores on Altruistic Value than the Constant sample, (b) inconstant male samples in Arts and Sciences tended to score lower on Academic Value than the Constant males. In other instances in which scale scores were associated with college and sex, congruence was not found on inspection.

Ability and Performance

Among the matrices in which variance ratios reached significance the effect of ability was significant only for Vocational Reason among females. When the female Vocational Reason means were adjusted for OSPE scores (Appendix III) Transfer samples were lower than Constant samples as was also true before adjustment.

Among the matrices in which variance ratios did not reach significance, ability was slightly but significantly associated with Academic Value in the female samples and with Altruistic Value and Influence of Experience in male matrices. Adjusted means are presented in Appendix II.

R_{OSPE} was also significant for first semester grade point ratio (Table 25). However, when g.p.r. means were adjusted (Appendix III) males in the Constant samples still had higher grade point ratios than males in the inconstant samples; but the Business Administration Withdrew females and Arts and Sciences Transfer females were similar to the Constant samples.

Internal Consistency of Scales

Hoyt reliabilities of the 13 factor scales as applied to the 36 subsamples are presented in Appendix III. Omitting the 12 samples which were used in forming the scales (Chapter VI) median values were as follows: (N = 24 samples) Vocational Reason 1.00; Social Reason .75; Conformity .80; Curiosity .53; Academic Value .64; Material Value .78; Altruistic Value .68; School Influence .68; Influence of Experience .56; Avocational Interest .56; Science Interest .67; Humanities Interest .63; and Verbal Interest .63.

TABLE 25

FIRST SEMESTER GRADE POINT RATIOS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College sample		Status						Significance	
		Withdrew	Delayed	Transfer	No record	Failed	Constant	F	OSPE
Arts and Sciences m.	M.	1.37	1.69	1.70	0.84	0.85	2.63		
	S.D.	1.07	0.73	1.09	1.20	0.82	0.49		
Business administration m.	M.	0.67	1.70	1.55	1.42	0.95	2.15		
	S.D.	0.82	0.52	0.94	0.90	0.72	0.39		
Engineering m.	M.	0.80	1.80	2.19	1.46	0.94	2.64		
	S.D.	0.91	0.80	0.92	0.83	0.95	0.43	**	**
Arts and Sciences f.	M.	1.79	1.88	2.30	1.79	1.07	2.50		
	S.D.	0.96	0.76	0.88	1.17	0.77	0.58		
Business administration f.	M.	1.78	1.16	1.28	--	0.57	2.17		
	S.D.	0.86	0.80	1.36	--	0.68	0.42		
Education f.	M.	1.86	2.13	2.06	1.18	1.28	2.35		
	S.D.	0.94	0.81	0.84	1.12	0.79	0.54	**	**

Note.--For each male and female set of 18 college samples significance of analysis of variance (F) and of multiple regression (t), adjusted for OSPE, is indicated in the right hand columns. See table, Appendix II. Entering students who withdrew in good standing before the end of the fall semester, 1960, were treated in this analysis as having earned a grade point ratio of 0.00. See Table 41 for N of each sample.

*P <.05.

**P <.01.

Discussion

Ability and Performance

Before interpreting the findings of this research, it is important to realize that the follow-up groups were so formed that ability and freshman performance were much more important in determining assignment to some categories (Failed, Delayed, Constant) than to the others. Consistent with a large number of studies in many colleges over many years, general ability, as measured by OSPE before entrance, and classroom performance, as indicated by first semester grade point average, were powerfully associated with academic survival. Members of the Constant group, although average in ability, began their college careers with above average grades; even when their grades were adjusted for ability statistically, these students, especially the males, tended to outperform those in all inconstant categories. In contrast, the 32 per cent of entrants who failed were distinctly inferior in test score and first semester performance. Those in the Delayed classification were marginal students; it seems probable that problems in coping with academic requirements had slowed the progress of many of them.

On the other hand, those in the No Record, Withdrew, and Transfer categories were comparable in ability to the Constant samples and to OSPE university norms, and those who finished the first semester performed as well in the classroom as all students at the University of Hawaii. The attrition represented by these groups then is not so clearly linked to ability and performance.

Selected Characteristics

A number of the characteristics significantly associated with status on follow-up reflect conditions peculiar to Hawaii. For example, the entering population was unusual compared to samples in other state universities in national-ethnic background, generation in the United States, legal residence and years of school attended. Furthermore, it was quite apparent in structured interviews with selected Constant seniors that individual circumstances also determined constancy. For example, one son of professional Caucasian after a year at another state university stated that he returned to the University of Hawaii (without loss of credits) over parental opposition but with the encouragement of a psychologist in the Counseling Center because he considered the instruction in his field to be superior.

The findings encourage speculation about the educational progress of certain groups in Hawaii. The children of Caucasian military personnel, who plan to transfer when their families are rotated to another assignment, tended to discontinue after entrance, in some instances withdrew after freshman testing and even before registration, and often it was difficult to trace them for follow-up purposes. The well-established residents of the state, many of them children of Japanese-Americans who are rising into positions of political and economic leadership, were less susceptible to interruption. As will be seen in the next chapter, young persons of Filipino and Hawaiian ancestry are less likely to attempt higher education than other groups in proportion to their age peers. In this study, of 89 entering youngsters of Hawaiian and part-Hawaiian background, only 4 qualified for the Constant classification. The analogy to many American Indians or American Eskimos in other states can be drawn: Disadvantaged descendants of an aboriginal population which was superceded by more "civilized" groups.

Inconstancy in males was linked with inadequate performance. It is suggested that in Hawaii girls who are the grandchildren of Japanese immigrants approach education with an exceptional commitment and persistence because teaching as a profession is strongly encouraged in the family. The triple-barreled effect of obedience to family expectations among Japanese-American girls, of the high prestige of teachers among Orientals, and of the anticipated economic advantage of a double family income among upwardly mobile persons may combine to encourage more dedicated female than male scholars. The results of this research support the recommendation that if such an interpretation is tested in further studies, ability and cultural characteristics should be controlled. It is concluded, then, that in any specific institution of higher learning the decisions to withdraw, to transfer or to reduce one's rate of progress may be linked in many respects with special local or even personal circumstances. (See Glazer and Moynihan, 1964, for a discussion of ethnicity and higher education in New York City.)

Attitudes and Plans

One may infer from the results that these students as entering freshmen were very poor prophets of their own survival but that in many instances they were correct in predicting their transfer to another institution. Undergraduate college preference was treated at this stage of the research as an expression of educational-vocational plan. Survey items which appraised intended majors or curricula and occupational goals were not used since they grossly overlapped the college item. (See Chapter IV and Appendix.) At the same time it was realized that several colleges (Arts and Sciences especially, Tropical Agriculture, and Business Administration) included a range of persons with quite diverse occupational and educational preferences. Therefore, undergraduate college should be construed as a very broad and loose classification scheme for educational-vocational choice.

As was true for the Constant group when stability was examined in Chapter IV, among all of the 1960 freshmen those entering Education ranked highest in constancy. The low proportions in Education who failed or transferred can probably be attributed to such local circumstances as a selective admission policy and the popularity of teaching among the children of established residents. During the period of this study Arts and Sciences accepted all successful applicants to the University of Hawaii including more students with low ability scores than Engineering, Nursing and Education. Arts and Sciences is also a logical college choice for transient students.

Factor Scales

A major finding in this study is that, with college, sex, and ability controlled, none of the 13 reported determinant factor scales was generally associated with constancy. The scales, which were found to be adequate in internal consistency for the objectives of this research, did reflect a number of clear differences between college, sex, or follow-up samples, but in no instance were Constant samples generally higher or lower than all inconstant samples within all college sex groups. It would appear then that persons who will be constant in their educational progress cannot be distinguished by their expressed motivation at entrance unless their sex and undergraduate college is known.

Follow-up Status

Interpretation of the systematic differences observed between samples in the various inconstant categories and the Constant samples are necessarily speculative until this research is replicated. It may be, for example, that those male and female entrants who were later to experience delay in their educational progress rated Material Value as of greater importance than Constant students in the same college because they were already more sensitive to socioeconomic stresses which would encourage them to take higher academic loads or drop out of school in order to accept employment Similarly, the females in the Delayed samples who were high on Conformity and School Influence may have been those who later exerted less resistance to external pressure.

College

As anticipated on the basis of the earlier cross-sectional studies of items reported to determine choice (Dole, 1961), distinctive patterns on the motivational scales were linked with undergraduate freshman college. (cf. Astin and Nichols, 1964.) A number of these patterns were observed across follow-up categories and were, in general, logical, as for instance the tendency of girls in Education to have higher scores on Altruistic Value and boyd in Engineering to have higher scores on Scientific Interest and Avocational Influence, and of Arts and Sciences entrants to score lower than the other vocationally oriented colleges on Material Value.

Sex

Differences between the sexes were observed on the Science, Humanities, and Verbal Interest scales. This finding is consistent with much previous research on vocational interests. Otherwise, males and females in comparable samples did not differ conspicuously except on Altruistic Value. As noted previously in these studies (Dole, 1964b) it is primarily in the interest domain that the sexes differ when they report their reasons for educational-vocational choice.

Congruence

The two observed instances of congruence as defined in this research were sex-related. Perhaps female freshman in Business Administration who were low on Altruistic Value received more positive reinforcement and felt more at home in a climate of men high on Material Value than females with typical scores on Altruistic Value and therefore tended to persist. It seems less clear why males but not females who were inconstant in Arts and Sciences should be lower than the norms on Academic Value.

Ability

Score on OSPE was found to have small and generally insignificant effects on the movitational measures. As in the factor studies reported in Chapter VI, measured ability did not seem to be closely related to expressed motivation.

Conclusions and Implications

It is concluded that at one state university attrition and persistence were rather directly related to local conditions and administrative policies. Local conditions and probably special personal circumstances influence who decides to transfer or to discontinue. Instructional practices determine acceptable academic performance, influencing who fails or is delayed. To understand, control, and predict the input and output of college students it is necessary to consider in any specific college the rigor with which academic standards are applied and the expectations with which families send their children to college. Whether families may be transient or established, protective or emancipating, and encouraging or discouraging about higher education is linked with the socioeconomic variables which have been examined in these studies.

Substantiating Iffert (1957), self-reported motivational factors, measured concurrently with entrance, seem to have very little general relation to constancy. However, specific associations between status on follow-up and motivational factors were identified. Furthermore, since the scales were adequate in reliability and a number varied with college and sex, additional multivariate analyses may be valuable in clarifying more precisely the role of academic motivation. Consideration of individual circumstances should be helpful also in understanding constancy in college.

For the college administrator these findings may mean that if the serious social problems of failure, delay, and discontinuance among students are to be reduced, the academic setting for higher education and the environment from which students are drawn should be examined. The college counselor and advisor might note especially that public expressions of motivation in the first days of college offer little basis for sound inference about the academic survival of the student.

In this study educational progress after high school occurred within a complex setting. In the last of the six studies, which will be reported in the next chapter, educational progress from intermediate school to the fall following graduation is examined. Motivational variables are analyzed in terms of consistency in program preference, a simpler variety of change in students than constancy.

CHAPTER IX

CONSISTENT VERSUS INCONSISTENT PUBLIC SCHOOL PUPILS

In this chapter, pupils who were consistent in educational and vocational planning from grade 9 through the year following high school graduation are compared with inconsistent pupils within four 9th grade program samples. An additional study of delayed college deciders is also summarized. After describing the formation of groups the samples are compared in terms of social and personal characteristics, plans and attitudes in grades 9 and 11, and scholastic ability as well as their replies to the determinant items on What I Want to Do and individual item stabilities. Summary measures of influences, values, and interests are reported. Group means on factor scales are examined and, with measured ability controlled variances analyzed. Finally, implications are considered.

Problem and Objectives

The Problem

Curricular structures such as the five secondary school study programs in Hawaii can be considered as means to formalize planned experiences for young people. In so far as these structures differ from one another, certain assumptions about the young people in them may be implicit. It would seem logical that those pursuing different programs would differ somewhat in educational and vocational plans and in the reasons for those plans. In the first phase of this research determinants salient to each of the five study programs were indeed identified (Dole, 1961). In the present phase of the research the implicit assumption of consistency is tested. That is, when a youth enters high school and takes, for example, a technical study program he behaves as if he were going to complete the program, continue in a related training, military, or occupational speciality and he is treated by others as if these plans would be realized. But, as has been shown in a preceding chapter, in fact, the chances are slightly higher than 5 out of 10 that he will change programs. Suppose that within each intended study program grouping in grade 9 those who later persisted consistently with their plans at least until the fall following high school graduation are compared with those in the same program who were later inconsistent. The following research questions can be raised:

1. How do consistent students compare with inconsistent students in personal and social characteristics (national-ethnic background, father's occupation, parental educational level, language spoken in the home, number of siblings)?

2. How do they compare in measured ability?

3. How do they compare in attitudes about themselves and their plans before starting high school and in grade 11?

4. How do they compare in educational and vocational plans expressed in grade 9, grade 11?

5. How do consistent students compare with inconsistent students in the values, interests, and influences reported as determining educational choice in grade 9, in grade 11?

6. How do they compare on reported determinant factor scales at grade 9 and grade 11 when measured ability is controlled?

7. In what respects, if any, do consistent students differ from inconsistent students across programs?

Procedure

Sources of Data

To identify consistent and inconsistent students, data about the same public school pupils as they progressed from grade 9 to post-graduate status were first merged from four sources onto a single tape by the Hawaii Department of Education, Research and Statistics, using the 1401 and 7040 computers at the University of Hawaii. The instruments, circumstances of administration, and grade level are specified in the following paragraphs.

1. What I Want to Do was administered by the public schools in grade 9. (See especially Chapter V, and Dole, 1961.)

2. Your Program and Your Future was administered by the public schools in grade 11. (See especially Chapter V, and Iwakami and Dole, 1962.)

3. The School and College Ability Tests (SCAT) along with an inventory (See Appendix I) of post-graduation plans and personal-social data were administered by the schools in grade 12 as part of the Hawaii standardized testing program. SCAT-V was selected as a measure of general ability.

For purposes of this research it would have been preferable to obtain measured abilities in grade 9, but within limits of time and budget it was not possible to integrate such data. However, for small samples in Sherman's study (1964) and in a pilot study at Waialua Intermediate School scores on the Differential Aptitude Tests Battery, administered concurrently with What I Want to Do were analyzed by program. Students who anticipated college study programs in high school and students who decided on college after the grade 9 survey and later entered college did not differ significantly in aptitude. Students with college intentions in grade 9 score significantly higher in measured aptitude than those with business, technical or terminal program preferences. Also within a 10 per cent statewide sample, males and females in all five study programs increased significantly from grade 10 to 12 on SCAT-V.

4. Follow-up status was supplied by the high schools (see report form in Appendix I) in accordance with procedures developed by Harris (Hawaii State Department of Education, 1963) then specialist in Research and Statistics. In October 1963, each school offering a post-high school educational program of any nature within the state was requested to supply the names of all of the 1963 public and private high school graduates who were currently enrolled. From previous studies, it was estimated that about 40 per cent of the high school graduates could be located. Appropriate forms were provided to record the requested information. Before high school graduation, each student's plans and his future or permanent address had been secured and each student had been assigned an identification number.

A follow-up data card was used to transmit to each high school some of the data obtained prior to graduation together with the information obtained from the schools offering post-high school training. In November 1963, each high school was asked to complete the data card for those not previously identified and to indicate the rank in graduating class of each student. The data cards were forwarded to the Research and Statistics office for processing.

This procedure resulted in a return of over 90 per cent of enrollment figures.

Formation of Follow-up Pool

Before forming consistent and inconsistent groups all subjects on the merged tape were classified (Table 26) by program preferred in grade 9 against status in November 1963, after high school graduation. Private school graduates, nonparticipants at grades 9, 11, or 12 and those with incomplete or inadequate records were omitted from this basic pool of 1,812 boys and 2.962 girls. Also for technical reasons the Hawaii State Department of Education reduced the male sample by approximately one-third during the tape merge. However, the smaller male sample is representative of all

TABLE 26

STATUS OF 9th GRADE SAMPLE BY PREFERRED PROGRAM ON FOLLOW-UP FIVE MONTHS AFTER GRADUATION

Status in November 1963	Program preferred in grade 9								All grade 9 sample	
	College preparatory		Technical		Business		Terminal			
	M	F	M	F	M	F	M	F	M	F
Four year college	386	791	71	28	33	146	7	19	497	975
Two year college.	77	140	19	2	8	18	2	3	106	163
Service Institute or academy.	3	1	--	--	--	--	--	--	3	1
Hospital-nursing education. .	--	28	--	1	--	1	--	2	--	32
Business school	16	136	9	18	10	211	2	16	37	381
Special school (technical). .	75	150	112	70	21	134	20	27	228	481
Post-graduate in high school.	--	--	--	--	--	1	--	--	--	1
Employed full-time.	80	108	128	56	22	156	48	58	278	378
Not employed, not in school .	27	64	35	34	9	95	19	33	90	226
Entered military service. . .	177	30	180	25	27	12	53	4	437	71
Location unknown.	49	40	37	11	11	53	15	9	112	113
Deceased.	1	--	1	--	--	--	--	--	2	--
No data	9	26	6	17	3	33	4	28	22	104
All	900	1,514	598	252	144	970	170	190	1,812	2,926

public school males, since its distribution among follow-up status categories in 1963 did not differ appreciably from the distribution of male graduates in 1962.

It was noted first that inconsistency between 9th grade program intention and follow-up status characterized a sufficient proportion of students to justify research. For example, only about one out of every two with college program preference in grade 9 had entered college after graduation.

Controlling for sex and program, four groups of consistent students and four comparison groups of inconsistent pupils were defined. The size of available N's in these subsamples was a limiting factor in selecting from the population pool. The subsamples are described in detail in the succeeding paragraphs.

College-Bound Consistent and Inconsistent

Two groups of college-bound consistent subjects were identified, 456 males and 816 females. All of these individuals selected a college study program in grade 9, grade 11, and grade 12; in grade 12 stated that they planned to go to college or university in the fall; and on follow-up were reported to be enrolled in a two or four year college or a military service institution.

The two comparison groups of college-bound inconsistent subjects comprised 384 males and 451 females. These young people preferred a college study program in grade 9 but on follow-up were found to be in business school, technical school, post-graduate high school, employed, not employed or in military service.

Technical Consistent and Inconsistent

There were 205 males who anticipated a technical study program in grade 9, were enrolled in such a program in grades 11 and 12, did not plan in the spring of their graduating year to attend a college or university in the fall, and on follow-up were in technical school, employed, not employed, or in military service. Because of the small N's a fairly lax definition of status on follow-up consistent with a technical study program was applied.

The inconsistent group included 248 males. These subjects picked a technical program as their intended high school preference in grade 9 but were not in a technical program in grade 11, nor were they attending a technical school on follow-up.

Business Consistent and Inconsistent

A business program in the 9th, 11th, and 12th grade surveys was selected by 232 girls who on follow-up were in business school, employed, or not employed or in military service. Again because the N was small a fairly lax definition of status on follow-up consistent with a business educational specialization was employed.

From the grade 9 survey 101 girls were identified who preferred a business study program, yet on follow-up were in a college or nursing education program or in technical school (non-business) and who were not in business school, employed, or unemployed or in military service.

College-Bound Consistent and Delayed College-Bound

Another variety of inconsistent college-bound subjects, those who deferred their decision to take a college preparatory study program until after the grade 9 survey, were studied separately by Sherman (1964). Sherman drew her subjects from the participants in the stability study described in Chapter V. She compared 650 males and 759 females who chose a college preparatory program both in grade 9 and grade 11 with 224 males and 214 females who at the 9th grade level indicated a preference for a technical, business, or terminal study program but were enrolled in one of the college preparatory programs in grade 11. In addition, the records of selected small samples were searched in intermediate school, high school, and college. Her college consistent groups included many of the same persons used to form the college consistent group for this study. Many of her delayed college-bound group were members of the business and technical inconsistent samples also. Her results will be summarized later in this chapter.

Representativeness of Samples

The subject pool included 46 per cent of male and 66 per cent of female pupils who had been surveyed in grade 9 throughout the state. In terms of official school enrollment figures for grade 9, data for 37 per cent of the boys and 53 per cent of the girls were available from all four surveys. The subject pool excluded those who later dropped out of school, transferred from the public school system or failed to participate in one of the succeeding surveys as well as all those whose records were discarded for technical reasons (e.g., failure to match names because of ambiguities, the previously mentioned loss of male subjects in tape merging, etc.) On the basis of comparisons by items, the subject pool is considered unrepresentative of all grade 9 pupils but the consistent and inconsistent samples are considered representative of those groups within all public school graduates in 1963.

Data Analyses

Within each of the four comparison pairs--college males, college females, technical males, and business females--the proportions responding to options for various items in the 9th, 11, and 12th grade surveys were computed. To compare distributions among options for personal and social characteristics, plans and attitudes, chi square was used to test the hypothesis that the distribution of responses among options by consistent students did not differ significantly from the distribution among options by inconsistent students.

For the determinant items differences between proportions of consistent and inconsistent students responding were tested for statistical significance by consulting binomial tables (Mainland, et al., 1956). To test the hypothesis that the consistent students did not differ from the inconsistent students in total reported influences, interests, and values chi square was applied.

Each consistent group was compared with its inconsistent peers in stability by measuring the proportion of responses in grade 11 identical in grade 9 (see Chapter IV); Mainland's tables were consulted to establish the significance of differences.

Seven factor scales (Chapter VI), which had been developed in coordination with the college factor scales, were applied to the group's determinant responses in grade 9 and in grade 11. Means, standard deviations, and test-retest correlations within groups between grade 9 and 11 were computed. Using multiple regression, variances were analyzed (F) in a 1 x 1 design applied to four comparisons on the seven scales. The application of multiple regression and covariance analyses, controlling for ability (SCAT-V), permitted calculation of the significance of differences between adjusted means (t) (Snedecor, 1946).

Results

Personal-Social Characteristics

On selected measures of personal and social characteristics consistent students in the college groups tended to differ more often from inconsistent students than did the consistent students in the technical and business groups. National-ethnic ancestry, generation, and father's occupation were measured in more than one of the surveys but since the group distributions were similar only the results of the 9th grade survey are reported here (Table 27). In these characteristics there were significantly larger proportions of Japanese, second generation Americans and children of fathers in professional and clerical occupations among the college consistent males and females. Among the co-eds also there were more daughters of Chinese Americans and of managerial fathers. The inconsistent college-bound students included larger percentages of fathers who were Filipino or Caucasian in ancestry and who held semiskilled jobs and whose generation in the United States was unknown.

More college consistent than inconsistent young people reported, when surveyed in grade 12 (Table 28), that their fathers and mothers had graduated from high school or college, that they were only children, and that they spoke English at home. In contrast consistent students in the technical and business groups tended to include more mothers and fathers with neither a high school nor college education than inconsistent students in the same groups. Inconsistent technical males were less likely than consistent technical students to have one sibling and more likely not to answer the question. The consistent business girls were more likely than the inconsistent girls to come from families of four or more siblings.

Performance and Measured Ability

The college male and female consistent groups had significantly higher means on SCAT-V taken in grade 12 (Table 29). Consistent boys within the technical group and girls in the business group, on the other hand, did not differ significantly in SCAT means from their inconsistent peers. Similarly when consistent and inconsistent pairs were compared on reported rank on graduating class, the college consistent groups ranked higher but within the technical and business groups there were no significant differences.

Educational and Occupational Plans

Before entering high school, the most popular post-graduation plan among both consistent and inconsistent college groups was to go on to college right away (Table 30). However, significantly larger proportions of those who later consummated these intentions than of those who were inconsistent indicated college aspirations in grade 9.

In constrast, the consistent technical males and business females did not differ significantly in expressed plans from their inconsistent counterparts. The most popular plan for all groups was to go to a technical or vocational school right away. One out

TABLE 27

SELECTED PERSONAL-SOCIAL CHARACTERISTICS OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
"My father is . . ."								
Caucasian	10.3	14.8	9.2	9.1	6.3	7.7	8.6	6.9
Chinese	5.3	6.0	7.0	3.1	6.3	4.4	3.9	5.0
Hawaiian.	1.3	2.9	0.9	2.4	5.9	9.7	3.4	5.0
Filipino.	3.7	11.5	5.1	16.2	16.1	15.3	15.5	9.9
Korean.	1.5	1.0	1.6	1.1	1.0	1.2	--	1.0
Japanese.	71.5	53.1	71.4	57.1	45.9	37.9	52.6	61.4
Other	2.4	2.1	1.1	3.1	8.8	8.1	6.9	4.0
Mixed	3.1	7.8	3.2	7.3	9.3	13.7	8.2	5.9
Don't know, no answer	0.8	0.8	0.4	0.6	0.5	2.0	0.8	1.0
X^2	42.96**		77.74**		6.85		4.00	
df	6		7		6		5	
"Who is the first person in your family to come to the U.S.?"								
Father.	4.6	7.3	4.3	10.9	8.8	10.9	6.9	5.9
Grandfather	48.7	27.9	49.3	28.8	15.1	18.5	27.6	26.7
Great grandfather or before	10.1	10.9	10.9	9.8	7.3	7.7	4.3	5.9
Don't know.	34.6	49.2	34.6	47.7	62.4	55.6	56.0	59.4
Not applicable, no answer	2.0	4.6	1.0	2.8	6.4	7.3	5.2	2.0
X^2	41.59**		188.64**		2.02		0.84	
df	4		3		4		3	

(Table continued next page)

*P < .05. **P < .01.

TABLE 27 (Cont'd)

SELECTED PERSONAL-SOCIAL CHARACTERISTICS OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
"Which is most like your father's job?" (82 options)								
Occupational classification								
Professional	7.7	3.9	9.7	3.5	1.5	2.8	1.7	--
Semi-professional	1.5	1.8	1.7	2.2	0.5	0.4	--	1.0
Managerial	10.5	9.1	12.8	8.9	12.2	8.9	6.9	10.0
Clerical	11.2	6.5	12.6	7.1	4.9	5.2	9.0	7.9
Domestic, protective	7.6	8.9	6.0	6.9	7.3	6.1	6.5	12.8
Skilled	36.3	38.0	32.6	33.0	31.7	29.8	32.3	29.7
Semi-skilled	6.4	11.7	6.7	14.2	19.0	19.4	16.4	14.8
Unskilled	2.0	4.4	3.3	4.7	2.4	2.8	3.9	2.0
Don't know	0.1	0.2	0.1	0.3	0.2	0.3	0.3	0.2
Other, no answer	16.9	15.4	14.5	14.3	20.3	24.3	23.0	21.6
X^2	22.41**		50.36**		3.35		5.25	
df	8		8		7		5	
N	456	384	816	451	205	248	232	101

TABLE 28

SELECTED PERSONAL-SOCIAL CHARACTERISTICS OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 12 (PER CENTS)

Item	College male		College female		technical male		Business female	
	C	I	C	I	C	I	C	I
"How many brothers and sisters do you have?"								
None	20.9	11.7	17.4	8.6	7.9	9.6	9.5	13.9
One	23.7	20.3	28.2	17.5	17.7	10.4	16.8	19.8
Two	22.2	22.3	22.2	22.6	14.8	19.6	19.8	22.8
Three	13.8	14.3	13.4	18.4	15.3	14.4	18.1	18.8
Four	6.2	10.4	7.2	12.6	12.8	12.0	15.5	6.9
Five or more (grouped)	6.6	14.6	7.3	17.0	27.1	23.6	15.2	10.0
No answer	6.6	6.5	4.3	3.3	4.4	10.4	5.2	7.9
X^2	35.31**		68.31**		12.34**		8.86*	
df	6		6		6		6	
"What is the language most often spoken in your home?"								
English	92.1	87.2	93.1	87.1	91.2	81.5	93.1	82.2
Japanese	5.3	6.8	5.4	7.3	2.9	4.4	3.4	8.9
Chinese	--	0.8	0.6	0.4	1.0	0.4	--	2.0
Filipino	1.1	2.3	0.4	2.9	--	--	2.6	1.0
All others, no answer	1.5	2.9	0.5	2.3	4.9	1.37	0.9	5.9
X^2	17.17**		27.56**		46.21**		25.15**	
df	3		4		2		2	
N	456	384	816	451	205	248	232	101

(Table continued next page)

*P <.05.

**P <.01.

TABLE 28 (Cont'd)

SELECTED PERSONAL-SOCIAL CHARACTERISTICS OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 12 (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
"Did your father complete . . ."								
High school	39.0	32.0	42.9	28.2	22.4	25.0	25.4	32.7
College	11.0	2.3	11.8	3.8	2.9	2.4	1.3	2.0
Neither	47.4	59.6	44.0	64.7	70.7	61.3	71.1	58.4
No answer	2.6	6.0	1.3	3.3	3.9	11.3	2.2	6.9
X^2. .	36.47**		67.44**		9.65**		7.70*	
df. .	2		2		2		2	
"Did your mother complete . . ."								
High school	37.5	35.2	41.3	23.9	23.4	21.4	17.7	26.7
College	8.1	0.8	5.6	2.7	2.9	0.8	1.7	--
Neither	52.6	59.4	52.7	71.2	71.2	66.1	78.9	67.3
No answer	1.8	4.7	0.4	2.2	2.4	11.7	1.7	5.9
X^2. .	31.34**		56.94**		16.30**		9.98**	
df. .	2		2		2		2	

TABLE 29

CONSISTENT COMPARED WITH INCONSISTENT GROUPS ON CLASS STANDING UPON HIGH SCHOOL GRADUATION AND ON SCAT-VERBAL RAW SCORES IN GRADE 12

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
SCAT-Verbal								
M	40.1	29.0	42.1	29.1	22.3	22.6	29.2	29.5
SD	9.9	9.8	9.1	10.0	8.1	8.1	9.5	11.4
t_{c-i} . .	15.73**		21.98**		0.40		0.25	
Class Standing Upon Graduation								
M	2.04[a]	3.34	1.67	2.92	3.75	3.88	2.87	2.98
SD	1.05	1.16	0.86	1.21	1.04	1.18	1.20	1.25
F . .	268.87**		424.53**		1.43		0.50	
$t_{c-i\ adj}$ . .	9.81**		10.45**		1.31		0.98	
N . .	423	352	750	420	193	222	225	91

Note.--For analysis of variance (F), df = 1, N-2. For multiple regression and covariance analysis ($t_{c-i,adj}$) with mean adjusted for SCAT-V, df = 2, N-3.

[a] Class standing coded 1-5 from high school report.

**P < .01.

TABLE 30

PLANS AFTER HIGH SCHOOL OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 AND GRADE 11 (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
Grade 9:								
"Which ONE of the following is MOST true of you?"								
(a) I want to quit school when I am 16 years old or before	--	1.0	0.1	0.2	--	0.4	--	1.0
(b) . . . finish high school . . . then . . . technical or vocational school right away	8.6	17.2	5.9	18.6	64.4	55.6	56.5	50.5
(c) . . . finish high school . . . become a homemaker right away . .	--	0.3	0.2	0.2	0.5	0.4	--	1.0
(d) . . . finish high school . . . get a job right away.	2.0	8.1	1.5	5.3	14.1	11.7	14.7	14.9
(e) . . . finish high school . . . enter the service as soon as I can	3.5	16.1	2.0	4.2	17.1	26.6	3.4	3.0
(f) . . . finish high school . . . go on to college right away . . .	85.7	57.0	89.6	69.8	2.9	4.8	24.1	27.7
(g) other, no answer.	0.2	0.3	0.7	1.6	1.0	0.4	1.3	2.0
X^2 . .	87.97**		80.66**		7.51		0.86	
df . .	4		4		3		2	
N . .	456	384	816	451	205	248	232	101

(Table continued next page)

*P < .05.

**P < .01.

TABLE 30 (Cont'd)

PLANS AFTER HIGH SCHOOL OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 AND GRADE 11 (PER CENTS)

Item	College male C	College male I	College female C	College female I	Technical male C	Technical male I	Business female C	Business female I
Grade 11:								
"Which ONE of the following is MOST true of you?"								
(a) I want to quit school before graduation	--	0.3	0.1	0.2	--	0.4	0.4	--
(b) . . . finish high school . . . go to a technical or vocational school right away.	4.6	39.4	3.3	47.9	54.1	38.3	63.4	59.4
(c) . . . finish high school . . . . become a homemaker right away. . .	--	--	--	0.7	0.5	0.8	0.4	--
(d) get a job right away	0.2	4.4	0.2	8.6	7.8	13.7	15.5	6.9
(e) enter the service as soon as I can.	2.4	25.8	0.4	4.9	37.1	36.7	3.4	4.0
(f) go on to college right away. . .	91.7	31.8	95.8	37.3	--	10.1	16.4	29.7
(g) other, no answer	1.1	3.4	0.1	0.4	0.5	--	0.4	--
X^2 . . .	291.26**		449.25**		85.01**		10.10**	
df . . .	2		4		2		2	
N . . .	456	384	816	451	205	248	232	101

of every four girls in the business program, both in the consistent and inconsistent groups, hoped to enter college after high school.

By grade 11 (Table 30) each of the four consistent groups differed significantly in post-high school plans from its paired inconsistent group. Over 90 per cent of the boys and girls who would later enter college and who had been selected because they had consistently chosen a college preparatory study program planned on college right after high school. Within inconsistent males and females the most popular plan was technical or vocational school, although about one-third still had college hopes. More of the consistent than inconsistent technical males and consistent than inconsistent business females hoped to take specialized training after high school.

As previously described (Chapter V), all subjects were presented a list of 81 occupational titles in grade 9 and again in grade 11 and asked, "Which would you like to be?" The titles were then grouped according to a modification of the Edwards' socioeconomic classification system. Both in intermediate and high school the consistent students within each of the four pairings differed significantly from the inconsistent students in vocational preference (Table 31). Boys and girls who later entered college showed more interest in professions than those who were inconsistent about college plans. Those in the technical consistent group were more likely to indicate a skilled occupational title than the technical inconsistent boys more of whom selected professional and service titles. Consistent business females opted more often than inconsistent business females for clerical titles and inconsistent business females for professional and service titles.

Attitudes about Plans

At the intermediate school level the consistent college-bound girls differed significantly from the inconsistent girls in anticipating changes in their aspirations (Table 32). More expected to change somewhat or very little and fewer were unable to answer or did not know. The three other pairings of consistent and inconsistent did not differ from one another significantly.

In high school the consistent college girls again differed significantly from the inconsistent girls in anticipated change (Table 33). Also the consistent business females expected to change very little in larger proportions whereas the most popular response by the inconsistent girls was to think their ideas about their futures would change somewhat.

No consistent group differed significantly at grade 9 from its contrasting inconsistent group in certainty about intended

TABLE 31

OCCUPATIONAL PREFERENCE CLASSIFICATION OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 AND IN GRADE 11 (PER CENTS)

Occupational Classification	Grade 9								Grade 11							
	College m		College f		Technical m		Business f		College m		College f		Technical m		Business f	
	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
Professional . .	71	49	75	66	5	10	9	14	76	32	82	40	4	13	11	30
Semi-professional	8	13	7	7	8	11	1	3	9	13	7	7	6	9	3	5
Managerial . . .	3	3	1	1	2	4	3	2	5	4	1	2	3	7	2	1
Clerical	1	1	5	5	1	--	78	63	1	2	2	27	1	--	72	29
Domestic protective service .	5	13	4	13	9	10	7	14	2	9	4	15	8	15	6	29
Skilled.	7	15	1	3	67	57	--	2	3	31	1	5	69	46	--	--
Semi- and unskilled. . . .	--	2	--	--	5	6	--	--	--	1	--	--	6	7	1	--
Housewife. . . .	--	--	1	2	--	--	2	1	--	--	--	1	--	--	1	1
Don't know . . .	1	2	3	1	1	2	--	--	1	3	2	1	3	3	1	1
Other, no answer	4	2	3	2	2	--	--	1	3	5	1	2	--	--	3	4
All.	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
N . .	456	384	816	451	205	248	232	101	456	384	816	451	205	248	232	101
X^2 . .	48.20**		41.44**		12.15*		16.79**		348.60**		304.98**		24.32**		63.15**	
df . .	5		5		5		3		5		5		5		3	

*P < .05.

**P < .01.

TABLE 32

ATTITUDES OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
"How much do you think you will change in your ideas about what you will like to be 10 years from now?"								
Very much	5.3	7.0	3.9	8.9	9.8	9.7	6.0	7.9
Somewhat.	14.9	16.4	22.7	14.9	10.2	9.7	16.4	17.8
Very little	33.6	30.2	36.0	28.4	26.3	23.8	26.7	26.7
Not at all.	2.6	1.8	3.7	4.0	2.4	2.8	5.2	5.0
Don't know, no answer	43.7	44.5	33.7	42.8	51.2	54.0	45.7	40.6
X^2 . .	3.39		40.85**		0.57		6.13	
df . .	4		4		4		4	
"How sure are you now (about) the study program you want to take in high school?"								
I am so sure that I know nothing will change my mind	16.7	7.3	11.6	8.6	10.2	9.3	17.2	9.9
I am sure but I may change my mind.	65.1	66.4	70.0	67.8	56.1	52.8	59.5	60.4
I guess I am sure	6.4	10.4	7.8	9.3	10.2	10.1	8.2	9.9
I am not sure and I think I will change my mind.	7.5	11.5	8.0	9.8	13.2	14.5	8.2	12.9
I am not sure at all, I really don't know, no answer	4.4	4.4	2.6	4.4	10.3	13.3	6.9	6.9
X^2 . .	22.21**		7.46		1.25		4.46	
df . .	4		4		4		4	
N . .	456	384	816	451	205	248	232	101

*$P < .05$.   **$P < .01$.

TABLE 33

ATTITUDES OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 11 (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
"How much do you think you will change your ideas about what you will like to do 10 years from now?"								
Very much	6.1	6.2	3.1	6.4	11.2	10.9	3.9	8.9
Somewhat.	28.3	24.2	29.8	23.1	20.0	20.2	25.0	33.7
Very little	32.2	28.9	43.0	40.4	25.4	26.6	41.4	24.8
Not at all.	2.4	3.1	3.4	6.7	4.9	6.5	6.9	6.9
Don't know, no answer	30.9	37.5	20.7	23.5	38.5	35.9	22.8	25.7
X^2 . .	3.68		29.93**		.20		11.07*	
df . .	4		4		4		4	
"How sure are you now that (present program) is the study program you really wanted to take in high school?"								
I am very sure; nothing will change my mind.	18.0	6.8	21.2	12.7	12.7	11.7	25.0	12.9
I am sure, but I may change my mind.	60.1	53.9	61.4	58.9	58.5	41.9	57.3	48.5
I guess I am sure	7.2	8.6	7.4	9.2	8.8	7.7	6.5	10.9
I am not sure and I think I will change my mind.	10.3	17.4	8.1	12.1	12.7	20.2	7.8	22.8
I am not sure at all and I really don't know, no answer	4.4	13.3	1.9	7.1	7.3	18.5	3.4	5.0
X^2 . .	40.64**		33.35**		21.00**		20.95**	
df . .	4		4		4		5	
N . .	456	384	816	451	205	408	232	101

*F < .05. **P < .01.

high school study program, but by grade 11 all groups differed significantly. Within each consistent group more youngsters were very sure or sure and fewer not sure or not sure at all than in the inconsistent comparison group.

Study Program

The 11th grade survey included five questions about the secondary school program decision (Table 34). The college consistent males differed from the college inconsistent males significantly in their answers to all these items. They were more likely to have decided on their programs pretty much by themselves, to have chosen their programs by grade 9, to have received a great deal or more than enough help from their intermediate schools and high schools in choosing a study program, and to have stayed in the same program since entering high school. The college consistent females showed similar patterns in responding to items about amount of say in decision, grade when decision made, and change in study program. The consistent technical males decided upon their study program significantly sooner and were more pleased with the help of their high schools than the inconsistent technical males. The consistent business females were also significantly more pleased with the help of their high schools in program selection than the inconsistent business females and fewer of them had changed programs in high school.

Influences

In Table 35 the influences reported by the four consistent and inconsistent paired student groups in grade 9 and again in grade 11 are compared item by item for significant differences in the proportions responding. Since each item could be checked or not checked independent of responses to other items, each item was analyzed separately. (Chi square was applied to the total number of responses to each check list as a proportion of N rather than to the distributions as in preceding tables.) Thus is may be seen that 26 per cent of the college consistent males indicated hobby as an influence upon intended program choice in grade 9 as contrasted with only 19 per cent of the college inconsistent males, a difference significant at the 99 per cent level of confidence. Furthermore, college consistent males replied significantly more often to the 15 influence items than did inconsistent males as indicated by a chi square of 51.26 with one degree of freedom.

At the grade 9 level there were no influence items to which all consistent groups responded differently from the inconsistent groups. The college consistent groups gave significantly more answers to the inventory than did the inconsistent groups.

TABLE 34

RESPONSES OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 11 TO ITEMS ABOUT SECONDARY SCHOOL STUDY PROGRAM (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
"How much do you feel you had to say about choosing your study program?"								
I made the decision entirely by myself	26.5	28.4	23.2	23.5	30.2	29.0	41.8	29.7
I made the decision pretty much by myself.	46.9	38.3	50.9	41.9	43.4	36.3	34.1	43.6
The decision was made both by me and others	21.7	25.8	25.4	30.2	22.9	26.2	21.1	23.8
My study program was pretty much chosen for me.	3.7	4.4	1.5	3.3	2.0	4.8	2.6	3.0
I really had no say at all about my study program	0.9	0.8	0.1	1.2	1.5	3.6	0.4	--
No answer.	0.2	2.3	--	--	--	--	--	--
X^2 . .	13.53**		19.21**		6.62		5.12	
df . .	4		4		4		3	

(Table continued next page)

*P < .05.

**P < .01.

TABLE 34 (Cont'd)

RESPONSES OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 11 TO ITEMS ABOUT SECONDARY SCHOOL STUDY PROGRAM (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
"When did you decide upon the study program you took in the 10th grade?"								
Before grade 7	0.7	1.0	2.8	3.1	1.0	--	3.0	1.0
Grade 7.	2.2	1.8	2.3	2.2	--	1.2	4.3	2.0
Grade 8.	12.7	8.3	13.8	7.8	10.2	7.7	10.3	7.9
Grade 9.	66.7	61.2	67.9	62.5	66.8	56.5	64.7	68.3
Upon entering grade 10, don't know, no answer.	17.8	27.6	13.1	24.4	22.0	34.7	17.7	20.8
X^2 . .	14.29**		32.15**		14.01**		3.21	
df . .	3		3		2		3	
"How much help was your intermediate school in preparing you to choose your study program?"								
Great deal	11.8	8.9	8.8	8.2	6.3	5.2	6.0	5.9
More than enough	11.8	8.6	12.6	8.0	7.3	4.8	7.8	7.9
Satisfactory	55.5	59.9	58.3	63.6	66.8	61.3	63.4	67.3
Less than satisfactory	12.3	9.4	12.3	10.4	7.3	10.9	12.1	12.9
None at all.	3.7	3.6	4.0	4.7	4.4	6.0	7.3	4.0
I don't know, no answer.	4.9	9.7	4.0	5.1	7.8	11.7	3.4	2.0
X^2 . .	20.66**		9.22		7.48		1.98	
df . .	5		5		5		5	

(Table continued next page)

TABLE 34 (Cont'd)

RESPONSES OF CONSISTENT AND INCONSISTENT GROUPS IN GRADE 11 TO ITEMS ABOUT SECONDARY SCHOOL STUDY PROGRAM (PER CENTS)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
"How much help was your high school when you chose your study program?"								
Great deal	13.6	10.2	14.7	17.1	13.7	10.1	28.0	11.9
More than enough	27.6	15.6	21.7	19.5	14.6	11.3	19.0	25.7
Satisfactory	45.2	57.3	52.8	54.3	62.4	60.1	46.6	50.5
Less than satisfactory	5.7	8.6	5.8	4.0	2.9	8.5	3.4	6.9
None at all.	3.7	1.6	1.5	2.0	1.5	1.2	1.7	2.0
I don't know, no answer.	4.2	3.6	3.5	3.1	4.9	8.8	0.4	3.0
X^2 . .	39.13**		6.30		10.98*		14.13**	
df . .	5		5		4		3	
"Have you changed your study program since you started high school?"								
Yes.	25.2	37.8	19.5	45.2	40.0	40.7	21.1	45.5
X^2 . .	25.10**		98.28**		.04		20.84**	
df . .	1		1		1		1	
N . .	456	384	816	451	205	248	232	101

TABLE 35

INFLUENCES UPON PROGRAM CHOICE REPORTED BY CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 AND IN GRADE 11 (PER CENTS)

Influence	Grade 9								Grade 11							
	College m		College f		Technical m		Business f		College m		College f		Technical m		Business f	
	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
Hobby	26**	19	13	10	27	22	9**	4	23*	18	13**	7	21	20	3	4
Free time . .	20*	16	16**	10	17	15	10	11	20**	13	18**	11	12	15	10	9
Teacher . . .	23	22	38**	28	13	11	11	25**	31**	18	44**	23	12	12	15	21*
Parents . . .	46**	37	50**	46	32	26	35	41*	31**	23	35**	26	19	17	20	28**
Classes . . .	32**	23	33**	22	18*	13	23	26	30**	17	27**	14	8	9	16*	11
Work.	18	21	17*	14	28	32	15	15	12	17**	15	18*	39**	25	10	17**
Friends . . .	26	24	32	34	29	32	35	31	33	31	35	42**	33*	27	35	43*
Relatives . .	19	17	24	24	15	16	25	20	20**	13	23	24	12	13	28**	19
Counselor . .	9	9	8	8	5	6	4	9**	23**	16	19	18	13	10	13	15
Tests	36*	26	31**	22	19	21	25	27	47**	23	44**	32	25	20	37*	28
Random. . . .	5	7*	4	5	7	7	8	8	5	7*	2	5**	7	7	3	9**
Career day. .	6	5	8**	5	3	6*	7	7	14*	10	15	17	9	12	19*	13
Movies, TV. .	18	15	18	23**	12	19**	22	18	12	10	13	13	11	7	21**	9
People. . . .	17	17	30**	23	13	21**	20	22	20	17	32	31	26	22	27	30
Other	5	4	4	5	3	4	5	3	4	3	5**	3	2	3	4	3
X^2(df=1). .	51.26**		19.81**		0.18		0.30		143.82**		29.05**		3.80		0.12	
N . .	456	384	816	451	205	248	232	101	456	384	816	451	205	248	232	101

*P < .05.

**P < .01.

For both males and females college consistency was associated with reported influences of free time, parents, classes, and tests. Consistent males more frequently checked hobby and inconsistent males random choice; consistent females indicated they were more susceptible to teachers, career days, and people in the field and less susceptible to movies and TV than those who later did not continue with their college plans.

Within the technical male group those who eventually consummated their plans were more influenced by classes and less influenced by movies, TV, and people in the field than those who were inconsistent. Consistent business girls more often indicated hobby; inconsistent business girls teacher, parents, and counselor.

By the junior year in high school differences between consistent and inconsistent college groups had increased; the consistent students checked more items in the inventory. Within all four groups the consistent students reported that they were more influenced by interest and aptitude tests.

College consistent boys and girls significantly more frequently than inconsistent students reported the influence upon their program choice of hobby, free time activities, teacher, parents, classes, and less frequently the influence of work experience or random choice. The college consistent males also differed significantly from inconsistent males in that more of them were influenced by relatives, counselor, and career day. College inconsistent females were more likely to respond to the influence of friends.

Reversing the trend among college groups, it was the consistent male technical group rather than the inconsistent which was more influenced by friends and work experience. Girls with a consistent commitment to business as a program more frequently than their inconsistent peers reported as influences classes, relatives, career day and movies and less frequently teacher, parents, and friends.

Values

As was true in the case of influences, the college consistent groups reported significantly more values than the inconsistent both before and after they had entered their high school programs (Table 36). In grade 9 the few students who checked fastest path to a diploma as an important reasons for prospective program choice tended to belong to the inconsistent groups. In the grade 11 survey significantly more consistent than inconsistent students in all four pairings valued preparation for a specialization. Practicality,

TABLE 36

VALUES DETERMINING PROGRAM CHOICE REPORTED BY CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 AND GRADE 11 (PER CENTS)

Value	Grade 9								Grade 11							
	College m		College f		Technical m		Business f		College m		College f		Tehcnical m		Business f	
	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
Aptitude . . .	43**	30	35**	24	23	28*	31	37	48**	29	41**	33	29*	23	39	41
Serve others .	16	15	37	35	12	11	12	24**	13**	8	36**	30	8	8	13	28**
Practicality .	47**	39	49**	38	37**	29	37	38	56**	39	59**	49	36*	31	41	38
Specialization	43**	32	40*	36	27	30	32**	24	41**	24	37**	29	27**	19	32**	23
Security . . .	34**	24	30**	20	17	17	25	30	35**	26	28	26	22	20	35**	22
Income	28**	20	16	15	17	19	15	17	32**	17	11	12	12	13	14*	8
Fastest. . . .	2	4**	2	3*	6	7	1	3*	--	3	--	1	7	7	1	2
Independence .	20	25	25	25	20	27**	27	27	16	17	18	24**	16	17	26*	20
Advancement. .	43	42	33	31	29	34*	35	30	42**	34	29	28	24**	18	31	26
Easy	4	4	2	3	9*	6	5	3	1	5**	1	1	7	9	4	4
Prestige . . .	10*	7	8	6	1	7**	5	4	11**	5	8**	4	1	4**	5**	2
Satisfaction .	50**	35	58**	41	33	34	48	42	47**	34	57**	44	31	29	46	41
Self-improvement	21	22	27	27	22	20	18	21	24**	18	32**	23	13	14	25**	10
Parenthood . .	9	8	17	15	9	10	8	13**	6	7	13*	10	3	4	4	11**
Achievement[a] .	--	--	--	--	--	--	--	--	41**	27	31**	24	23	20	25	20
Other	1	1	2	1	1	--	--	--	4*	2	5	5	2	3	2	3
All X^2(df=1) .	25.28**		27.84**		0.76		0.36		75.47**		24.38**		1.59		4.12*	
N. .	456	384	816	451	205	248	232	101	456	384	816	451	205	248	232	101

[a] Item not presented to grade 9.

*P <.05.

**P <.01.

security, satisfaction, and achievement (which was not included in the 9th grade survey), were also associated with consistency.

At the 9th grade level those boys and girls who would later consummate college intentions placed greater emphasis than their inconsistent peers on aptitude, practicality, specialization, security, and satisfaction as reasons for intended program choice and the consistent boys also significantly more often than inconsistent boys checked income and prestige. Technical consistent boys prized practicality and easy courses more often than inconsistent technical boys and less often aptitude, independence, opportunity for advancement and prestige. Proportionately more consistent than inconsistent business girls prized the opportunity to prepare for a specialization and fewer service to others and parenthood.

In grade 11 college consistent youngsters were distinguished from those who did not follow through on their early plans in their greater emphasis on aptitude for the program, service to others, prestige, and self-improvement. In addition the consistent college men checked security, income, and advancement as reasons for program choice and the consistent co-eds parenthood but less frequently independence and easy courses. The consistent technical students were more often concerned about advancement and less often prestige than their inconsistent peers. Consistent business girls were more likely to characterize themselves as stressing income, independence, prestige, and self-improvement, and as in grade 9, less likely to characterize themselves as stressing service to others and parenthood.

Interests

Only the female college consistent group gave more interest responses than its inconsistent peer group in both grade 9 and grade 11 (Table 37). In grade 9 there were no items associated with consistency in all pairings. In grade 11 there was a tendency for inconsistent students, especially girls, to respond more frequently to food.

College-bound pupils of both sexes were significantly more interested in numbers and science both in grade 9 and grade 11. In grade 9 the boys were slightly more interested in ideas and less interested in food and machines; more college-bound girls were interested in music before and during high school than their inconsistent classmates. The consistent technical males did not differ on any item from the inconsistent students.

By grade 11 the college consistent males and females also expressed significantly more interest in ideas and children and youth and less in machines as program determinants. Inconsistent males tended to like art in contrast to inconsistent females who

TABLE 37

INTERESTS DETERMINING PROGRAM CHOICE REPORTED BY CONSISTENT AND INCONSISTENT GROUPS IN GRADE 9 AND GRADE 11 (PER CENTS)

Interest	Grade 9								Grade 11							
	College m		College f		Technical m		Business f		College m		College f		Technical m		Business f	
	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
Words	15	13	32	29	10	10	60	57	15**	9	28	26	6	8	38**	24
Ideas	46*	41	41	41	26	27	30	35	50**	32	42**	35	31	29	28	39**
Food.	3	5*	9	10	7	7	9	17**	1	2	5	8**	4	6	3	14**
Machines. . .	35	40*	8	9	80	76	16	11	24	44*	5	14**	76**	57	34**	11
Numbers . . .	47*	35	34**	24	15	18	33	30	49**	29	31*	26	13	17	28	24
Adults. . . .	7	6	10	12	2	7	9*	5	6	5	7	12**	1	5**	10	10
Music	7	9	18**	14	7	10	7	10	7	8	15**	8	2	7**	7	6
Children,youth	6	6	45	44	4	5	14	18	5**	1	44**	30	1	4**	9	23**
Science . . .	50**	41	27**	19	19	17	5	4	52**	27	29**	14	14	19	1	5*
Plants,animals	14	15	10	9	16	19	3	6*	12	12	8**	4	8	16**	1	6**
Art	13	14	15	17	14	14	5	7	8	12**	15**	11	11	12	1	13**
Other	5	6	5	6	2	4	9	10	6	4	6	8*	4	5	13**	6
All X^2(df=1).	3.00		4.63*		.70		.36		24.36**		20.47**		.75		.24	
N .	456	384	816	451	205	248	232	101	456	384	816	451	205	248	232	101

*P $<$ .05.

**P $<$ .01.

checked this item significantly less frequently than the college consistent girls. Inconsistent females more often indicated an interest in work with adults, food, and other activities and less often in plants and animals.

The technical school male who would later consummate his plans responded before high school to all interest items like his inconsistent classmates. However, by grade 11 he was significantly more likely to be interested in work with machines and less likely work with adults, music, children and youth, and plants and animals.

In grade 9 girls who were later consistent in their business plans tended to prefer work with adults more often than inconsistent girls and in grade 11 with words, machines, and other activities. Inconsistent business females were characterized by a significantly higher interest in food, and plants and animals both before and during high school and in ideas, children and youth, science and art in grade 9.

Factor Scales

As would be anticipated from the item comparisons previously presented, no factor scale was significantly associated with consistency in all four samples either before or during high school (Table 38). However, before the adjustment for verbal ability the college-bound consistent groups at grade 9 and again at grade 11 were higher than the inconsistent groups on Academic Value, School Influence, and Science Interest. After adjusting for ability, the college-bound males were still significantly higher than the college inconsistent males on Academic Value and Science Interest and the females were higher on School Influence in both testings. The consistent college males were significantly higher on Conformity than the males who did not consummate their college plans both at grade 9 and 11.

Before entering secondary school the college consistent males and females had higher unadjusted Material Value scores. By grade 11 the college consistent males and the business consistent females exceeded their inconsistent peers even with ability controlled.

The business inconsistent girls scored higher than the consistent girls on Altruistic Value and School Influence in grade 9 while the technical inconsistent boys were higher on School Influence. In grade 11 these differences no longer reached statistical significance. Finally, the college consistent males and females were distinguished from their inconsistent peers by higher

TABLE 38

CONSISTENT COMPARED WITH INCONSISTENT GROUPS IN GRADE 9 AND IN GRADE 11 ON FACTORED SCALES ADJUSTED FOR ABILITY

Scale	Grade 9								Grade 11							
	College m		College f		Technical m		Business f		College m		College f		Technical m		Business f	
	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
Material																
M	1.73	1.47	1.51	1.31	1.20	1.28	1.39	1.45	1.81	1.33	1.46	1.37	1.09	0.98	1.48	1.13
SD	1.37	1.23	1.28	1.19	1.28	1.24	1.14	1.15	1.43	1.32	1.17	1.21	1.20	1.05	1.31	1.08
F	7.22**		6.79**		0.44		0.20		23.30**		1.33		1.02		5.18*	
t_{adj}	1.15		1.15		0.67		0.42		3.39**		0.38		1.01		2.35*	
Academic																
M	2.32	1.72	2.37	1.94	1.40	1.39	2.24	2.19	2.34	1.46	2.33	1.80	1.37	1.16	1.99	1.75
SD	1.47	1.37	1.56	1.46	1.34	1.30	1.41	1.35	1.57	1.39	1.59	1.42	1.30	1.18	1.39	1.35
F	34.52**		21.19**		0.01		0.08		68.82**		32.00**		3.00		1.95	
t_{adj}	3.51**		2.47*		0.09		0.33		5.21**		1.89		1.78		1.43	
Altruistic																
M	0.53	0.49	1.24	1.19	0.49	0.47	0.48	0.71	1.17	0.73	1.77	1.38	0.73	0.63	0.96	1.10
SD	0.88	0.81	1.17	1.09	0.78	0.80	0.89	1.00	0.88	0.77	1.08	1.03	0.74	0.70	0.89	1.03
F	0.30		0.52		0.06		4.03*		54.07**		37.36**		1.79		1.53	
t_{adj}	2.51*		0.71		0.20		2.04*		5.65**		5.37**		1.35		1.22	

(Table continued next page)

Note.--For analysis of variance (F), df = 1, N-2. For multiple regression and covariance analysis (t_{adj}) with M adjusted for SCAT-V, df = 2, N-3. Means in table are unadjusted; all significantly higher adjusted means also significantly higher before adjustment.

*P < .05. **P < .01.

TABLE 38 (Cont'd)

CONSISTENT COMPARED WITH INCONSISTENT GROUPS IN GRADE 9 AND IN GRADE 11 ON FACTORED SCALES ADJUSTED FOR ABILITY

Scale	Grade 9								Grade 11							
	College m		College f		Technical m		Business f		College m		College f		Technical m		Business f	
	C	I	C	I	C	I	C	I	C	I	C	I	C	I	C	I
Conformity																
M	0.75	0.59	0.80	0.76	0.47	0.51	0.64	0.64	0.63	0.39	0.66	0.53	0.31	0.36	0.53	0.51
SD	0.77	0.70	0.78	0.75	0.60	0.69	0.69	0.75	0.78	0.65	0.73	0.69	0.59	0.57	0.65	0.62
F	8.33**		0.80		0.34		---		20.06**		8.56**		0.62		0.12	
t_{adj}	2.75**		0.59		0.57		---		3.10**		2.22*		0.78		0.37	
School																
M	0.75	0.62	0.85	0.66	0.41	0.44	0.47	0.68	1.16	0.69	1.23	0.90	0.61	0.55	0.85	0.76
SD	0.84	0.80	0.85	0.79	0.65	0.69	0.69	0.77	0.97	0.88	1.00	0.92	0.82	0.80	0.90	0.92
F	4.98*		15.20**		0.23		5.63*		48.28**		31.78**		0.43		0.65	
t_{adj}	1.28		3.03**		0.49		2.36*		4.77**		3.38**		0.65		0.81	
Experience																
M	1.00	1.05	1.24	1.26	0.99	1.23	1.09	1.08	0.92	0.84	1.18	1.21	1.06	0.90	1.20	0.97
SD	1.11	1.17	1.24	1.25	1.18	1.18	1.12	1.16	1.08	1.10	1.17	1.23	1.12	1.09	1.25	0.98
F	0.51		0.08		4.29*		0.01		1.00		0.18		2.08		2.42	
t_{adj}	0.14		1.19		2.11*		0.13		1.69		0.99		1.40		1.58	
Scientific																
M	1.50	1.28	0.85	0.60	1.60	1.54	0.69	0.59	1.79	1.45	1.03	0.75	1.46	1.42	0.78	0.57
SD	1.19	1.05	0.92	0.86	1.06	1.04	0.81	0.73	1.35	1.17	1.10	0.94	1.05	1.24	0.84	0.75
F	7.35**		21.66**		0.40		1.04		13.59**		19.27**		0.14		4.33*	
t_{adj}	2.47**		3.16**		0.65		1.04		2.10*		1.68		0.39		2.10*	
N	423	352	750	420	193	222	225	91	423	352	750	420	193	222	225	91

Altruistic Value scores in grade 11.

Stability

For each of the most popular determinant items the stability of consistent students was compared with that of inconsistent students (Table 39). No item was associated with consistency in all groups. However, the two college-bound consistent samples showed greater stability on influences of free time, teacher, classes, and tests; on values of aptitude, service to others, practicality, specialization, and satisfaction; and on interests in words, ideas, number, children and youth, and science. Inconsistent college pupils were more stable in responding to interest in machines and, in contrast, consistent technical and business samples were more stable on this item.

For all items within each check list (Table 40) the college consistent groups gave more stable replies than the inconsistent, but none of the four paired groups differed in order of determinant item popularity. The stability in response of the consistent and inconsistent samples to selected personal and social characteristics, plans, and attitudes items was also tested for significance (Table 42). Except for the business females, subjects defined as consistent in these studies were more likely to give the same answers to the miscellaneous questionnaire items in grade 11 as they had in grade 9.

When compared in respect to stability of factor scale scores over the period from grade 9 to 11, in general the consistent samples did not differ greatly from the inconsistent samples (Table 41). Out of 28 comparisons there were only two instances in which the differences between correlations attained significance--not much more than might be expected by chance. More of the test-retest relationships were low and positive; none, in fact, exceeded .50. Of the seven factor scales, as applied to the eight sets of data, Science Interest tended to be most stable and Altruistic Value least stable. Boys in technical programs, especially those who were consistent on follow-up, were least stable of the samples studied on the factor scales.

Early and Late College Decision

Before discussing these results, Sherman's (1964, pp. 76-78) comparison of early (consistent) and late (inconsistent) college deciders within a college-bound group will be summarized.

> "Students whose grandfathers had immigrated from Japan were more likely to be in the consistent group; students of Hawaiian, Filipino, or 'mixed' ancestry were more likely

TABLE 39

STABILITY OF SELECTED ITEMS FROM GRADE 9 TO GRADE 11 FOR CONSISTENT AND INCONSISTENT GROUPS

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
National-ethnic origin	89**	83	90	88	63	80	85	92*
Generation in U.S.	61**	50	62	59	56	53	60**	45
Sureness about program	48*	42	53	49	46*	37	48	44
Anticipated change in ideas about self	42*	36	42	39	34	37	32	35
Occupational goal.	40**	19	49**	27	34*	26	57	65
Father's occupation.	54	50	59*	54	56*	47	55	56
Plans after graduation	81**	44	87**	47	54**	44	58	50
N . .	456	384	816	451	205	248	232	101

*Probability that this proportion is higher than proportion in comparison group exceeds 95 per cent confidence limit.

**Probability that this proportion is higher than proportion in comparison group exceeds 99 per cent confidence limit.

TABLE 40

STABILITY OF MOST POPULAR DETERMINANT ITEMS AMONG CONSISTENT AND INCONSISTENT GROUPS

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
Influences								
Hobby	42	43	33	26	34	35	15	26**
Free time	35**	18	34**	13	23	32	22	36**
Teacher	51**	27	64**	37	19	21	24	44**
Parents	41	36	47**	33	26	19	39	37
Classes	45**	25	38**	18	11	19	24	12
Work	25	29	31	31	56**	40	18	27**
Friends	38	32	46	49	48**	31	40	52**
Relatives	36	27	40	43	20	30	50**	40
Tests	64**	38	61**	45	31	29	67*	59
Career day	37	38	24	35	17	36**	44	43
Movies, TV	25	22	29	25	16	15	42**	22
People in field	30	27	44	43	37	37	53	50
Values								
Aptitude	59**	30	59**	38	36	32	51	54
Serve others	27*	16	56**	42	12	8	26	63**
Practicality	64**	46	67**	57	45	51	49	50
Specialization	45**	35	46**	34	31	30	37	33
Security	41	41	41**	31	20	22	64**	43

(Table continued next page)

*Probability that proportion of this group exceeds proportion of contrasting group exceeds 95 per cent.

**Probability that proportion of this group exceeds proportion of contrasting group exceeds 99 per cent.

TABLE 40 (Cont'd)

STABILITY OF MOST POPULAR DETERMINANT ITEMS AMONG CONSISTENT AND INCONSISTENT GROUPS

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
Values (Cont'd)								
Income	49**	28	30**	16	17	17	27	24
Independence	34	32	32	31	29	25	37	33
Advancement	57**	39	40	35	20	25**	36**	27
Satisfaction	61**	49	64**	56	43	45	57	57
Prestige	34	26	42**	33	20	14	26	24
Interests								
Words	42**	19	50**	40	24	24	44**	33
Ideas	60**	42	55**	45	37	39	41	49*
Machines	41	59**	29	50**	79**	64	33*	27
Numbers	71**	47	59**	49	23	32**	42**	27
Children, youth	22**	9	67**	43	--	--	24	39**
Science	71**	38	54**	32	33	37	--	25*

TABLE 41

CORRELATIONS OF FACTORED SCALES FROM GRADE 9 TO GRADE 11 IN CONSISTENT AND INCONSISTENT PUPILS

Scale	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
Material	.28	.28	.32**	.09	.11[a]	.15	.19	.31
Academic	.30	.25	.36	.29	.16	.23	.19*	.44
Altruistic	.14	.14	.31	.17	.01[a]	.06[a]	.13	.28
Conformity	.24	.15	.28	.24	.11[a]	.15	.23	.25
School	.33	.29	.23	.18	.08[a]	.25	.18	.33
Experience	.22	.25	.28	.19	.18	.20	.22	.27
Science.	.50	.42	.44	.42	.42	.40	.24	.21
N . .	423	352	750	420	193	222	225	91

*P < .05.

**P < .01.

[a] This correlation does not differ from no relationship at .05 level.

TABLE 42

SUMMARY DATA ON INFLUENCES, VALUES, AND INTERESTS REPORTED BY CONSISTENT AND INCONSISTENT GROUPS IN GRADES 9 AND 11

Group	Influences (k = 15)		Values (k = 14)		Interests (k = 12)	
Rank Order Correlation in Item Popularities Between Groups						
	9	11	9	11	9	11
College male (C v. I)	92	88	95	96	92	90
College female (C v. I)	89	85	96	95	98	64
Technical male (C v. I)	90	94	94	96	95	95
Business female (C v. I). . . .	89	75	94	85	88	61
Mean of Items Checked						
College male consistent	3.06[a]	3.23[a]	3.71[a]	3.77[a]	2.48	2.36[a]
College male inconsistent . . .	2.64	2.33	3.07	2.68	2.30	1.86
College female consistent . . .	3.26[a]	3.40[a]	3.79[a]	3.74[a]	2.54[a]	2.34[a]
College female inconsistent . .	2.81	2.84	3.21	3.19	2.34	1.95
Technical male consistent . . .	2.42	2.47	2.63	2.38	2.01	1.72
Technical male inconsistent . .	2.48	2.19	2.77	2.30	2.13	1.83
Business female consistent. . .	2.54	2.62	2.97	3.19[a]	1.99	1.72
Business female inconsistent. .	2.64	2.56	3.10	2.76	2.09	1.79
Mean of Items Checked on Both Surveys and Stability of all Items						
	M	Stab.	M	Stab.	M	Stab.
College male consistent . .	1.25	41	1.80	49	1.38	53
College male inconsistent .	0.69	26	1.05	34	0.90	39
College female consistent .	1.43	44	1.85	49	1.27	50
College female inconsistent	0.96	34	1.20	37	0.88	38
Technical male consistent .	0.74	31	0.75	29	0.96	48
Technical male inconsistent	0.70	28	0.77	28	0.87	41
Business female consistent.	0.97	38	1.25	42	0.68	34
Business female inconsistent	0.98	37	1.27	41	0.70	34

[a] Consistent group differs from inconsistent group in this program at .05 level.

to be in the inconsistent group. Consistent students were more sure of their plans, and expected to change very little. Plans and occupational preferences of both groups were congruent with their choice of study program. Scores of selected samples did not differ on the VR+NA Scale of the Differential Aptitude Tests, considered a measure of college potential.

"Values, influences, and interests displayed a strong relationship to consistency at the 9th grade level. In the 9th grade more boys who were planning to enter college programs wanted to become engineers, were interested in science and numbers, were influenced by parents, teachers, and classes, and wanted to specialize in a field that was interesting and which would provide opportunity for advancement. More 9th grade girls who wanted to go to college wanted to become teachers and nurses, were interested in working with children or in science, valued being able to serve others, and had been influenced in program choice by parents, teachers, and classes. More boys and girls who would not enter a college program until after entry into high school were interested in machines (mechanics and secretaries), had been influenced by work experience, and thought it was important to finish school easily and quickly.

"By the 11th grade, when all students in the sample were enrolled in a college preparatory study program, the relationship of influences and interests to consistency in choice was modified. College-bound students who were consistent in educational choice also displayed greater stability in reported interests, influences, and values.

"Between 9th and 11th grade the interests of students who had entered a college preparatory program early appeared to sharpen and crystallize; those of inconsistent students continued to change and broaden. The number of reported values diminished somewhat; for boys; getting ahead and being independent were no longer so important. Changes in educational program were accompanied by altered occupational preferences. Eleventh grade girls who had shifted into college programs wanted to serve others, were interested in children and preferred teaching and nursing to secretarial occupations.

Follow-up

"Results of the follow-up of a selected sample of high school graduates supported the proposition that early college decision seemed to make little demonstrable difference. High school seniors did not differ in achievement (percentile class rank) nor in rate of acceptance by colleges. Results of a survey (conducted two years after the inventory which dictated assignment to consistent or inconsistent group) of all entering freshmen at the University of Hawaii revealed that differences between consistent and inconsistent students did not reach statistical significance on reasons for coming to college, sureness of choice of field, independence, or self-knowledge. Scores on the Ohio State University Psychological Test used for college admission did not differ. Ratings on a scale of congruency of vocational choice (Stanley, 1964) also did not differentiate between consistent and inconsistent groups. However, there were some differences in undergraduate college choice."

Discussion

Consistency

Space prohibits a detailed discussion of all the results of these five comparative studies. In general the public school students who were consistent in their college plans from the end of intermediate school through to six months after graduation differed markedly from inconsistent college-bound in personal-social characteristics, ability, attitudes about themselves and their programs, vocational plans and in reported determinants even before entering secondary school. Consistent technical males and business females differed in fewer respects from those who did not reach their original goals. It would appear then that consistency in specifying and holding to a logical educational plan has greater social and psychological implication within college-bound groups than within groups intending to enter technical or business specializations. It is possible that this finding was to some extent an artifact of experimental design. The inconsistent technical and business groups were heterogeneous on follow-up status: some were in college, some were unknown or were unemployed. True differences between those moving toward a more demanding program (college) and a less demanding one academically (terminal) may have cancelled out. Another possibility, suggested especially by the data on attitudes toward self and program, is that in grade 9 (when response to the survey in part determined assignment to comparison group) the available possibilities were perceived less clearly by the business and technical samples. It was seen in Chapter V in reporting the stability of program options that the college options were more stable from grade 9 to 11 when general and scientific tracks were combined. The preferences of the business and technical samples in intermediate school did not, as in the case of the college-bound, reflect as strong a commitment to a clear sequence of future educational-vocational positions.

How is a strong early commitment to college maintained? It appears to be facilitated, in Hawaii at least, if one is female, Oriental, the grandchild of an immigrant, but from an acculturated family in which English is spoken at home and father is better educated than fathers of classmates. Consistent with studies of variables associated with college entry, economic advantage is important (father professional, few siblings), as are measured ability and high school academic performance. The college consummater appears to be more self-aware. Females expect to change, males make their program decisions earlier but neither sex group is exceptionally confident.

Determinants and the College-Bound

By examining responses to the determinant items and to the seven factor scales some inferences may be made about consistent and inconsistent college-bound students. In choosing a college preparatory high school program the consistent students were higher on Academic Value; they were more likely to be influenced by their classes, to take into account their own aptitude for college study, to desire specialization in a field of knowledge and satisfaction in their studies and to be interested in ideas. They sound, in short, like "grinds." In addition, more of those who eventually entered college expressed a Science Interest by indicating that they were influenced by a hobby and by free time activities, were interested in work with machines, with numbers and with science. Although it has been shown in Chapter V that among these students scientific occupational preferences were far from stable over a two-year period, the 9th graders who considered these activities important in their planning were more likely to attend college. These findings were true even when ability was controlled statistically.

Technical School

Among those who looked forward to a technical school program at the end of intermediate school the differences between consistent and inconsistent were not associated with ability, high school performance, cultural background, economic status or attitude toward self and plans in grade 9 but rather with occupational plans. (More looked to a skilled occupation.) In grade 11 they seemed, rather logically, to be more satisfied with guidance in their program choice and to have made their program decision earlier and to be more committed to technical school training after graduation. In grade 12, they reported less parental education.

So far as determinants were concerned the only differences on factor scales was on School Influence in which the consistent sample had a lower score than the inconsistent after adjusting for ability. It is concluded that consistency in technical training is related almost solely to vocational opportunities.

Business

Consistent girls who preferred a business program before high school were clearly different from the inconsistent sample. The inconsistent girls were less satisfied in their attitudes toward their educational plans and the help of their high schools in program selection. Were guidance procedures unsatisfactory?

The inconsistent girls, many of whom eventually entered the college preparatory program (Sherman, 1964), perhaps had more exposure to the idea of further education from better educated, more acculturated parents and after intermediate school adapted related occupational goals. As a group they were no more able and no better classroom students than those who were consistent, but Sherman (1964) showed that those girls who came from the business occupations preference into a college preparatory program in grade 11 were above average. A process of sorting students on the basis of their ability and performance can be assumed.

It may be that before secondary school the inconsistent business girls in some cases were potentially homemakers rather than secretaries (higher on Altruistic Value), liked food and were (inappropriately) influenced by the school (tests, counselors) to enter the business program. By 11th grade more of them may have rejected the Material Value (income, independence) associated with business areas (Rosenberg, 1958).

Stability

Was stability on questionnaire items generally associated with consistency? A tendency in this direction was evident, especially in the male and female college-bound samples who not only checked more determinants than inconsistent samples but also gave proportionately more stable determinant replies and were more likely to indicate the same personal characteristic option. This might represent a response set associated with later consistency or simply greater cooperativeness in filling out survey forms.

So far as determinant items are concerned it seems logical that many of those who changed their plans should recall, inaccurately, different reasons which were more congruent with present plans. This phenomenon of retroactive distortion was identified in Chapter VI among the college constant samples.

The relatively high stability of tests, aptitude, and satisfaction as reported determinants across comparison groups suggest that factors frequently stressed in guidance procedures may for a number of young people have had a permanent impact before high school. Also Sherman's (1964) study of those who delayed the college decision until after grade 9 supported the conclusion that stability in determinants is associated meaningfully with inconsistency in educational progress.

When determinant items were formed into factor scales at grade 9 and 11 and the scales correlated, stability was not strikingly more evident in any consistent sample than its inconsistent comparison sample. It appears that the factors which were measured were far from fixed overthe two-year period in the thinking of these subjects.

Developmental Changes

Generalizations based on changes in factor scores or determinant items in the same group from grade 9 to 11 must be rather speculative. Since the grade 9 survey was administered six months before high school entry, it is impossible to say whether increases and decreases from grade 9 to 11 are true shifts or distorted retrospections. However, in all eight samples Conformity declined and Altruistic Value advanced. This might reflect psychological weaning processes, e.g., perhaps lessened dependence and a greater sensitivity to others. An increase in School Influence upon decision making could reflect the impact of school guidance and instructional procedures in the six months before high school. In another sense, these trends confirm cross-sectional results (Dole and Sherman, 1963b) on the larger populations from which these samples were drawn, but, of course, this research was not designed to measure developmental changes in motivation directly. It is important to remember that the determinants were measured first in prospect than in retrospect.

Implications for Guidance and Curriculum

The evidence to this point would seem to support maximum provision for flexibility in curriculum organization. With large numbers of pupils whose reasons for decision shift and with cultural variables as well as psychological variables associated with consistency, change in the direction of educational-vocational sequences was found to be common in approximately half the pupils sampled. For this half certainly the assumption of consistency in planning and distribution among study programs is not supported.

These results also raise questions about the value of the track system. The present procedure in which pupils somehow on entering high school are shunted into educational specializations, often on the basis of occupational plans and reported determinants, may merit reconsideration. Within the three secondary school study programs selected for study in this project a majority of the pupils whether consistent or inconsistent tended to be unstable in their reasons for educational decision.

If the program structure is maintained, the present research may suggest to guidance officials characteristics and attitudes associated with inconsistency. For example, when an able potential college-bound student is identified in intermediate school, exploration in the counseling interview of his academic values, conformity and attitudes toward the influence of the school might be especially fruitful in anticipating inconsistency.

This research had made it evident, then, that inconsistency is not associated with the same variables across program and sex. If there is a general personality trait of inconsistency, it appeared in these studies as a tendency to be unstable in answering all kinds of questionnaire items. Consistency was linked in logical ways to the character of specific programs. Differences between consistent and inconsistent samples in various personal and social characteristics, ability, attitudes, plans, determinant items and scales were associated with one or another 9th grade program preference. Such differences were more common and more often associated with motivational variables among the college-bound. In technical boys consistency appeared to be linked primarily to occupational plans and in business girls to motivational congruence, acculturation of parents and effective guidance. Finally, conclusions based on the findings of this study will be integrated in the next chapter of this report with the results of the five studies reported in the preceding chapters.

CHAPTER X

CONCLUSIONS AND IMPLICATIONS

This research has been directed toward the general question: How are the educational and vocational choices of public school and university students determined? In the six studies which were reported in preceding chapters the common theme was change and stability. Specific conclusions and implications were presented as a part of each study. In this chapter conclusions are summarized, generalizations are extended, methodological and theoretical considerations in educational and vocational development are reexamined and general implications for practice are pointed out.

General Conclusions

General conclusions from the six follow-up studies of the determinants of educational-vocational choices may be drawn.

1. When reported determinants of college attendance were measured concurrently and then retrospectively, single items were found generally to be low in stability.

2. When reported determinants of high school study specialization were measured prospectively and then retrospectively, single items and factor scales were found generally to be low in stability.

3. Thirteen major determinant factors were identified as underlying the decision to attend college.

4. Eight major factors, paralleling the college factors but perhaps more primitive in structure, were identified as underlying educational-vocational decision before college.

5. When Constant college students were compared on 13 major factors with various inconstant samples, no measure of academic motivation was associated with constancy in general. However, a number of factor scales, along with environmental and personal characteristics, were associated with specific inconstant samples within specific colleges.

6. When consistent public school pupils were compared on seven determinant factors with inconsistent pupils, no measure of educational motivation was associated with consistency in general. However, a number of determinant factor scales, along with environmental and personal characteristics, were associated with consistent samples within specific high school study programs.

Generalizations

Determinant Stability

Two populations, two crucial periods in educational-vocational decision, and two measures of determinants were used in parallel studies on the stability of determinant items, on the factor structure underlying choices, and on constancy and consistency in student progress. Stability and instability were considered to be lawful and predictable characteristics of reported determinants when measured prospectively or concurrently and then remeasured retrospectively. There appeared to be individual differences in stability among various kinds of items, item options and scales as well as within individuals and groups. Among major sources of instability were methods of measurement, subject motivation, and irrelevant psychological variables (social desirability, response sets)--although these sources were not closely controlled in this study. A phenomenon termed retrospective distortion was identified as another probable major source of variability.

Consistent with other studies in which change on self-report inventories over time was measured (Bloom, 1964), reported determinant items were generally less stable than personal characteristics items. The most stable single items were value of satisfaction from educational specialization and interest in science and in children and youth.

Specific occupational and educational plans (measured over two or three years) varied from one another in stability; these differences in stability appeared to be associated with sex, educational level, ability and specialization. On plans items the college samples were more stable than the high school samples although the time between surveys was longer and boys were less stable than girls. Science specialties were low in stability, perhaps because it was difficult for new aspirants to enter fields with course prerequisites. Overall, it was concluded that problems in measurement and in uncontrolled sources of variability so confound the results as to contraindicate the use of single items in retrospective form.

Factors

The unsatisfactory reliability of single items justified a series of eight factor analyses on groups varying in educational level, sex, occupational goal, academic performance, socioeconomic status, etc. Six clear major factors emerged: Academic Value, Altruistic Value, Material Value, Science Interest, Conformity, and School Influence. Two other major factors were slightly less well defined: Influence of Experience and Humanities Interest. The obtained major factor structures did not include items measuring ability, academic performance, socioeconomic characteristics, educational plans, or occupational aspirations.

There was evidence that, beside these major motivational structures, group-specific factors such as Sex Role and decision-specific factors such as College-Bound, plus idiosyncratic reasons, underly educational-vocational choices. The results of the factor matching procedures were in many respects consistent with the occupational determinant factor structures obtained by Tyler and Sundberg (1964) and the work value factor structures extracted by Super (1962), (O'Connor and Kinnane, 1961). Some of these factors may generalize across a wide variety of decisions in human affairs.

Constancy and Consistency

When groups were formed on the basis of follow-up status, selected members of the public school population were classified as either consistent or inconsistent. Members of the college population were assigned to seven categories judged to vary in constancy. Both inconsistency and inconstancy can be considered forms of instability in educational progress (change in direction or in position). Consistency-inconsistency as studied in this research within a somewhat loosely defined, track curricular system appeared to be a fairly simple phenomenon. In contrast, constancy-inconstancy was more complex. Over a three-year period many options both within and without a state university were available to each subject.

Constancy and consistency were both associated with a number of similar psychological and environmental variables. For example, if subjects were third generation, Americans of Japanese ancestry, female, interested in teaching as a career, high in ability or above average in classroom performance, they were more likely to move without interruption or alteration through an educational sequence toward a congruent vocational-educational objective. A supplementary study of Oakland high school students (Dole, 1965) substantiates the generalization that cultural background, socio-economic status and sex role are important in understanding change in educational progress. Of interest is that attitudes about educational-vocational plans were not associated strongly with constancy or consistency.

A major finding in these studies is that when follow-up status was carefully defined and when initial educational specialization (study program or undergraduate college), sex, and ability were controlled, the factor measures of educational motivation were not generally related to consistency or constancy. However, a number of scales were linked in logical ways to consistency within a study program: Thus, the consistent college-bound scored higher on Academic Value than the inconsistent. Furthermore, various scales were linked to some categories of inconstancy: For example, those categorized as Delayed in college progress scored higher than Constant college samples on Material Value.

Implications

Method and Theory

The results supported the use of multiple methods in measuring change, multiple samples in appraising stability of educational progress, and multivariate techniques in identifying interrelationships. It was clear that if there are individual differences in various aspects of change, methods must be adapted accordingly. Diverse samples are required, when many factors are group-specific and when consistency and constancy are related to environment. As Simpson, Simpson and Harper (1960) have concluded in relation to occupational choice, a traditional dependent-independent variable design is insufficient.

The phenomenon of retrospective distortion was identified in these studies. It was possible to "confirm" the recalled reason for going to college but not to ascertain which was more "correct," the degree of importance offered by a subject as a freshman or as a senior. The subject may have changed in honesty or insight. Since retrospective questions are frequently used in occupational psychology (Anderson, 1960; Davis, 1964; Iffert, 1957; Norton and Kuhlen, 1950; Roe, 1956; Utton, 1960) it would seem highly desirable to test their validity in many situations as Weiss et al, (1963) and Keating, Paterson and Stone (1950), have done in verifying employment histories. It is remarked in passing that many basic and applied questions are phrased retrospectively when sociologists, political scientists, historians, psychiatrists, physicians, journalists, and clinical psychologists solicit informants.

In considering change and stability this research has focused on two crucial periods in the educational-vocational development of young persons living in a single state. What generalizations do the data justify about change as a variable in human behavior? The appraisal of change in self-report measures is confounded by artifacts in measurement, irrelevant sources of variability, and idiosyncrasy as Fiske (1963) and Bloom (1964) have pointed out. Many young people explain their decisions to others with stereotyped rationalizations, which are superficial, purely verbal, unstable and quickly forgotten. However, there are also substantial numbers of public school and college students who commit themselves to a course of action, are consistent over long periods in explaining it, and consummate their plans eventually. The basis for such constancy appears to be threefold: (a) motivation linked to sex norms and occupational goals; (b) generally favorable circumstances within the environment, especially family expectations and cultural tradition; and (c) generally favorable personal circumstances (maturity and ability coupled with absence of disruptive contingencies).

The working conception of educational-vocational choice with which this series of studies was undertaken (Dole, 1961) stressed individual development within a complex context. This conception may now be reformulated. Each young person as he progresses through stages of occupational development (Super, Starishevsky, Matlin and Jordaan, 1963) and through decision sequences (Tiedeman, 1961) assumes social, cultural, and sex roles and is governed by occupational aspirations. These psychological forces combine with values, interests, and perceived influences in a multitude of patterns. Environmental forces transmitted through family, school, church, and other social institutions shape the individual's concepts of his abilities and his possibilities (Tyler and Sundberg, 1964). The follow-up studies presented in this report have clarified some of the motivational variables (public report on reasons for decision), demonstrated that variability and invariability in development are probably best considered as specific rather than general characteristics of young persons and suggested a number of lawful relationships.

Practice

What do these findings mean in general for educational organization, teaching, guidance, and counseling, manpower utilization and research? The track system in secondary education and the pre-vocational undergraduate college structure do not seem to fit the facts about large numbers of young persons. Inflexible curricula, in which requirements discourage late entry, reward the committed students but may penalize the many young persons with unstable occupational and educational plans, including disadvantaged youth.

Administrative structures which assume constancy in students may contribute to waste of human resources. In general, inconstancy and inconsistency in plan were not convincingly and clearly related in these studies to incongruence or inadequate performance under all circumstances. (See especially Sherman's study, 1964, of those who decided upon college after intermediate school.) Also Stanley (1964) has shown occupational incongruence to be unrelated to emotional instability.

For young persons in America pressures for conformity, for compliance with school influence and for a college degree, plus social norms which stress material and vocational considerations appear to conflict with instrinsic interests in specialization and academic values. Further examination of this dilemma and exploration of possible resolutions are recommended to educational leaders.

Hawaii is typical of many American states in the way in which its public schools and state university sort out students on the basis of ability and performance. The two follow-up studies showed that substantial numbers failed to survive in academic competition. Half of the 9th graders with college plans did not attend any college after high school. One-third of the university freshmen flunked out. Whether such high failure rates are desirable for the students involved, for the national welfare, and for the schools are problems in public policy. Thoughtful discussion, careful research, and experimentation with various educational procedures (junior college plans, selective admission, increased guidance services, permissive grading) are highly desirable.

Teachers, administrators and counselors may be able to capitalize on some of these findings. It was suggested in previous chapters that educators and counselors should discount, as often unstable, plans and motivations expressed by students. Assuming that youngsters must make choices within educational sequences as they now occur, counselors might give more weight in predicting congruence to evidence about personal and social characteristics and about past performance and measured ability than to inventoried interests, values, and other self-reported variables. These suggestions are likely to meet resistance since they imply some revision in current counseling practices.

It was also suggested that educators prepare students for change. Educators might, in effect, help young persons to anticipate the possibility that their environments, motivations, and aspirations may alter, help them to tolerate ambiguity and encourage them to resist pressure for an immediate answer to the common question, "What job are you studying for?"

Drawing on some of the data of this research, guidance and student personnel officers may be able to identify groups of able youngsters with characteristics like those who abandon college plans or discontinue higher education. Various kinds of intervention or prevention can then be attempted with such poor risk groups.

Several problems for further research have been proposed in preceding chapters. Now that factor scales have been developed, they may have utility as measures of educational-vocational motivation in other investigations. However, the use of these scales in counseling individuals is contraindicated by the data on their stability and internal consistency. Additional studies of constancy and congruence among various populations seem desirable. Finally, intensive clinical analyses of persons over long periods might extend understanding of the relation of special circumstances to consistency and constancy.

Conclusion

It is concluded, in sum, that item determinants of educational-vocational choices are low in stability, when measured retrospectively. However, measured concurrently or prospectively, determinant items may be formed into major factors with wide generality in decision. On some of these major motivational factors and on some environmental and personal characteristics students who change direction or alter sequence during their development differ within rather than across initial choice from those who are invariant. Thus, differences in motivation between constant and inconstant and between consistent and inconsistent groups have proved to be specific, not general.

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APPENDIX I

Materials

Survey of 1963 High School Graduates and Student Questionnaire (Developed by Hawaii Department of Education).

Follow-up Survey of 1963 High School Graduates (Developed by Hawaii State Department of Education).

1960 Freshman Survey and answer sheet (Developed by Student Personnel Office, University of Hawaii).

Follow-up Survey of 1960 University of Hawaii freshmen who withdrew voluntarily.

SURVEY OF 1963 HIGH SCHOOL GRADUATES
for
Joint Committee on Guidance and Employment of Youth

Graduate Survey
Questionnaire
April, 1963

Dear Senior,

Since 1952 the Joint Committee on Guidance and Employment of Youth has, in cooperation with public and private schools and their senior classes, secured the post high school plans of seniors. The information has been of great interest and value to all concerned with improvement of the education of youth in Hawaii. It is safe to say that Hawaii leads the nation in having continuous information about its graduating seniors. We hope to continue this outstanding record but need your help to do so.

The following questions should be thoughtfully answered and we know we can count on you to do a good job in the manner we found that others over the last ten years have done.

Sincerely,

The Joint Committee

AFTER GRADUATION I PLAN TO

SCHOOL:	Yes	No	Not sure
1. Enter a four-year college	___	___	___
2. Enter a two-year junior college	___	___	___
3. Enter a business or commercial school	___	___	___
4. Enter other school	___	___	___
EMPLOYMENT:			
5. Go to work full time permanent	___	___	___
6. Go to work temporarily	___	___	___
7. Enter apprenticeship training	___	___	___
MILITARY SERVICE:			
8. Enter military service. Active duty 2 or more years	___	___	___
9. Active duty 6 months	___	___	___
10. Reserve or national guard training	___	___	___
OTHER PLAN:			
11. Do you have plans other than school, employment or military service?	___	___	___
12. HAVE YOU BEEN ACCEPTED AND NOTIFIED FOR ADMISSION TO SCHOOL?	___	___	___

	Yes	No	Not Sure
13. Have you already accepted a job? (either permanent or temporary)	___	___	___
14. Do you need help in getting a permanent job?	___	___	___

PLEASE MARK CAREFULLY

If you have indicated that you plan to attend college (four- or two-year), will more than 50 per cent of your anticipated college costs have to come from scholarships, loans and/or part-time employment? ___ Yes ___ No

(Please refer to the OCCUPATION CODES as you answer questions 16, 17 and 27. Please write in chosen code number in the appropriate block.)

15. Name of school you plan to attend. code 15.

Name ______________________________ ________

16. Occupation for which you plan to train: code 16.

Occupation ______________________________ ________

17. What apprentice trade do you plan to enter: code 17.

Trade ______________________________ ________

18. Number of years you have attended public school in Hawaii (grades 1-12) 18. yrs.

19. Number of years you have attended private school in Hawaii (grades 1-12)________________ 19. yrs.

SUMMARY OF PLANS
Mark your most important plan for each of the following months
(MARK ONE PLAN ONLY PER MONTH)

Your plans for	June '63	July '63	Aug. '63	Sept. '63	Oct. '63	Oct. '64
20. School	___	___	___	___	___	___
21. Employment	___	___	___	___	___	___
22. Military Service	___	___	___	___	___	___
23. Other Plan	___	___	___	___	___	___

PLEASE MARK CAREFULLY

24. Have you registered with the state employment service? Yes ___ No ___

25. Is the job you have accepted permanent? (see No. 13) ___ ___

26. Name of firm by whom you will be employed (permanent or temporary) please print ____________________

27. Job title or kind of work you will be doing: (permanent or temporary) ____________________ code

Dear Senior:

Thank you for your help! The information you have given will greatly aid in planning a better education for all students in Hawaii.

Will you please review your card and make sure all marks are clear. Erase cleanly. Double check your coding. Every question should be answered.

The Joint Committee

____
Do not write here

(over)

State of Hawaii
Department of Education
RESEARCH & STATISTICS

Secondary Survey
Grade 12
April, 1963

STUDENT QUESTIONNAIRE

Dear Senior:

Thanks for your kokua! Before the tests begin we would like your answers to a few questions. Please complete the questions and return the sheet to your Test Administrator.

Please Print LAST NAME FIRST NAME MIDDLE SEX

______________________________ male female

NAME OF SCHOOL ______________________________

(Please Print) PRESENT ADDRESS OR WHERE MAIL MAY REACH YOU IN FUTURE

____
Number Street Name City State

TELEPHONE ____________ ____________

1. How many years have you been in public school in Hawaii including this year? (Count each grade 1 year.) ____ Years (36)

2. Have you been to public school on the mainland? ___ Yes (1) ___ No (2) (38)

   a. How many years were you in public school/s on the mainland? ____ Years (40)

3. Have you been to a private school in Hawaii? ___ Yes (1) ___ No (2) (41)

4. Have you been to a private school on the mainland? ___ Yes (1) ___ No (2) (42)

5. In which high school program have you been enrolled? (Use Code Sheet) (High School Program) Code ________ (43)

6. Are you planning to go to college or university? ___ Yes (1) ___ No (2) (44)

a. If you are, when do you plan to go? ____(1) Next Fall ____(2) Later (45)

b. What do you plan as your field of educational specialization (major)? (Use Code Sheet - College Program)

______________________ Code ____ (46)

7. What is your Father's occupation? (Use Code Sheet - Occupations) ______________ Code ____ (48)

a. If your Mother is employed, what is her occupation? (Use Code Sheet) (Occupations) ______________ Code ____ (50)

8. Have you ever repeated a full grade in school? ___(1) Yes ___(2) No (51)

9. Have you skipped a full grade in school? ___(1) Yes ___(2) No (52)

10. Did your Father complete High School___ College___ Neither___? (53)

a. Did your Mother complete High School___ College___ Neither___? (54)

11. My father is Caucasian___ Chinese___ Hawaiian___ Filipino___ (55) Japanese___ Other___ Mixed___ I don't know___ (56)

12. How long have you lived in Hawaii? ____ Years (57)

13. How many brothers and sisters do you have? ____ Number (59)

and what order by birthdate are you? ____ Order (60)

14. What is the language most often spoken in your home? (Use Code Sheet) (Language) ______________ Code ____ (61)

15. Of the people listed on the Occupation Codes Sheet, which one would you like to be? (Use Code Sheet - Occupations) ______________ Code ____ (63)

GRADUATE SURVEY
May, 1963

DIRECTIONS FOR ADMINISTERING

Survey of High School Graduates

BACKGROUND AND PURPOSE

This survey is sponsored by the Joint Committee on Guidance and Employment of Youth and is being conducted by the Department of Labor and Industrial Relations and the Department of Education.

We are interested in the present plans of public high school students concerning further education, work, military service, etc. The information gathered from each student will be used for research and for possible follow up. Eventually we hope the results will improve guidance services and instructional practices.

MATERIALS

For each student there should be a questionnaire.

ADMINISTRATION

Please follow standard testing procedure. The survey is untimed and most groups finish within fifteen minutes. Whispering, interruptions, or collaboration should be discouraged.

When the group is assembled say: THIS IS A SURVEY (NOT A TEST) TO FIND OUT WHAT PLANS YOU MAY NOW HAVE FOR THE FUTURE. THERE IS NO RIGHT NOR WRONG ANSWER AND NO TIME LIMIT. YOUR ANSWERS WILL BE OF GREAT VALUE TO YOUR STATE AND NATIONAL OFFICIALS.

LET US GO THROUGH THE DIRECTIONS TOGETHER (Review "Dear Senior" section of Questionnaire).

Then say: PLEASE WRITE YOUR NAME, THE MAILING ADDRESS AND TELEPHONE NUMBER ON THE QUESTIONNAIRE. TRY TO ANSWER EVERY QUESTION.

(SUGGESTIONS ON PAGE 2)

Pause: DO YOU HAVE ANY QUESTIONS?

Pause: PLEASE GO RIGHT AHEAD AND FINISH MARKING THE FORM. WHEN YOU ARE FINISHED, BRING YOUR QUESTIONNAIRE TO ME.

SUGGESTIONS

You may find it helpful to walk around the room and make sure the instructions are being followed.

Suggestions for answering students' questions: Help them with simple matters of fact; e.g., clarification of directions. Avoid elaborate definitions of terms; e.g., What's this word "permanent?" Say: "My instructions are that if you are not sure what the words mean, answer the best you can. After you have turned in your questionnaire I will be glad to discuss it with you, if you wish." Note such questions on Report Form.

In other words we prefer that if learning were to take place as a result of the survey that it occur afterwards so that the results will not be influenced by different administrators.

COLLECTION OF MATERIALS

Please have the students turn in their forms individually so that you may rapidly glance at them for gross discrepancies. Do not take the time to read them over. A quick glance will often screen out the occasional individual who has neglected to enter his name, made improper marks, omitted a code, etc.

REPORT FORM

Please fill out the report form immediately after administering. We greatly appreciate your suggestions and observations.

RETURN OF MATERIALS

Questionnaires are to be returned with the Report Form to the Office of Research & Statistics, P.O. Box 2360, Honolulu 4, Hawaii. Use the enclosed franking sticker - NO STAMPS ARE NEEDED - this is official government business. Please arrange forms uniformly (Survey of 1963 High School Graduates--UP).

JOINT COMMITTEE ON GUIDANCE AND
EMPLOYMENT OF YOUTH

CODE SHEET

Secondary Survey
Questionnaire
Code for Question 5 - Secondary Survey April, 1963

HIGH SCHOOL PROGRAM most like the one which you are completing:

Code No.

1 College preparatory (scientific) program. I have been studying mostly higher mathematics, and about plants, animals, air, water, and the sun and stars, so that I can go to college to study science. These are like some of the courses I am taking or have taken: Advanced Algebra, Biology, Chemistry, Plane Geometry, Solid Geometry, Trigonometry, Typing, Foreign Language.

2 College preparatory (general) program. I have been studying mostly art, music, history, and some math and science so that I can enter college. These are like some of the courses I am now taking or have taken: Speech; a science course; Art; Foreign Language; Music; Typing; Algebra, Geometry or any other math course.

3 Technical program. I have been studying in the shop about machines, tools, gardening, how to make and fix things--or homemaking, how to cook, sew and take care of a family. These are like some of the courses I am now taking or have taken: Science; Math; Mechanical Drawing; Practical Arts: Shop, Homemaking, Horticulture, Vocational Agriculture.

4 Business occupations program. I have been studying about business, shorthand, typing, bookkeeping and training to become a clerk so that I can work in an office. These are like courses I am now taking or have taken. General Business, Bookkeeping, Typing, Shorthand, Business Arithmetic, Business English, a course in science.

5 Terminal program. I have been studying mostly courses for those who do not think they will go on for more schooling after graduation from high school. I am not taking any special program of courses like the ones listed above. These are like some of the courses I am now taking or have taken: Physical Education, Family Education, Math, Science, Typing, Art, Music.

Code for Question 6b - Secondary Survey

COLLEGE PROGRAM:

Code No.	
1	Liberal Arts - Humanities (art, literature, music, languages, etc.)
2	Liberal Arts - Social Sciences (psychology, sociology, pre-law, economics, ect.)
3	Liberal Arts - Science (physics, chemistry, biology, pre-med, etc.)
4	Education
5	Business
6	Nursing
7	Agriculture
8	Engineering
9	Cannot say.
10	Other. On the answer sheet write in "10" and name of program.

Code for Question 14 - Secondary Survey

LANGUAGE most often spoken in home:

Code No.	
1	English
2	Japanese
3	Chinese
4	Korean
5	Filipino
6	Samoan
7	Hawaiian
8	Portuguese
9	Other. On the answer sheet write in "9" and specify the language.

--o--

Note: USE OCCUPATION CODES FOR ITEMS 7, 7a AND 15 IN SECONDARY SURVEY QUESTIONNAIRE.

OCCUPATION CODES

GENERAL

1. Baseball player
2. Cannery worker
3. Custodian or janitor
4. Dancer or singer
5. Delivery man
6. Driver: truck, bus or taxi
7. Fireman
8. Fisherman
9. Football player
10. Foreman or supervisor
11. Gardener
12. Guard
13. Heavy machinery operator
14. Housewife
15. Mailman

SCIENTIFIC

40. Bacteriologist
41. Biologist
42. Chemist
43. Dental hygienist
44. Dentist
45. Doctor
46. Engineer
47. Home economist
48. Laboratory technician
49. Mathematician
50. Nurse
51. Optometrist
52. Pharmacist
53. Physicist

16. Officer in Armed Forces
17. Policeman
18. Rancher
19. Service station attendant
20. Service man: soldier, airman, marine (enlisted)
21. Stevedore
22. Stewardess
23. Usher and Usherette
24. Watchman

LIBERAL

25. Actor and Actress
26. Architect
27. Commercial artist
28. Counselor
29. Inventor
30. Journalist and writer
31. Lawyer
32. Librarian
33. Minister or mun
34. Musician
35. Psychologist
36. Recreation leader
37. Social worker
38. Teacher
39. Therapist: physical or occupational

BUSINESS

54. Accountant
55. Bookkeeper
56. Business owner
57. Clerk
58. Manager
59. Salesman
60. Secretary

TECHNICAL

61. Baker
62. Beautician
63. Butcher
64. Carpenter
65. Cook or chef
66. Draftsman
67. Electrician
68. Farmer
69. Machinist
70. Mason
71. Mechanic
72. Painter
73. Photographer
74. Pilot
75. Plumber
76. Printer
77. Repairman: radio, TV, washers, etc.
78. Tailor and Seamstress
79. Waiter and Waitress
80. Welder or sheet metal worker
81. Plantation laborer
82. I don't know
83. Other: Write in ON YOUR QUESTIONNAIRE.

FOLLOW-UP CARD SENT TO ALL SECONDARY SCHOOLS IN HAWAII

FOLLOW-UP SURVEY OF 1963 HIGH SCHOOL GRADUATES
Hawaii State Department of Education

NAME Last First Middle Sex (M or F) School

Address City and State Telephone Student No.

MARK ONE ONLY
(Except #8)

1. Four Year College . . . . ____
2. Two Year College. . . . . ____
3. Service Institution or Academy. . . . . ____
4. Hospital-Nursing Education. . . . . . ____
5. Business School . . . . ____
6. Special School (Technical). . . . . . ____
7. Post Graduate in High School. . . . . ____

Name of School Now in ____________

---

8. Married and In School . . . . ____
   Married and Employed. . . . . ____
   Married, Not In School or Employed. . ____

---

9. Employed full time (including night school). . ____
   Employed by. . . . . ____
   Job Title or Kind of Work. . . . . ____
10. Not Employed and Not In School . . . . ____
11. Entered Military Service . . . . ____
12. Location Unknown . . . . ____
13. Deceased . . . . ____

Class Standing in High School	100-81%	80-61%	60-41%	40-21%	20-1%
	___	___	___	___	___

Name of each 1963 high school graduate was typed on card before circulation. See Hawaii State Department of Education, Public School Statistical Series, Circular 10 (1963) for additional information.

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU 4, HAWAII
October 1, 1963

Dear Sir:

We have been asked to assist in a follow-up study of the 1963 public and private high school graduates. One of the missing links is the present location of the public or private high school graduate, Class of 1963. We obtained his plan prior to graduation, but little is known as to whether the plan was followed. We need your help.

Attached is a form which will let us know which 1963 Hawaii graduates, either of a public or a private school, are now enrolled in your school. We trust you will assist by providing the information either on the attached form or by similar means. In turn, we will provide a listing to the high schools, who then will locate the remaining 1963 graduates. Our aim is to avoid individual school requests to you and to assist them in their overall follow-up. We feel your information will help to locate some 40 per cent of our 1963 graduates at the outset of the study.

We would appreciate the requested information by January 10 or before, if at all possible.

Sincerely,

Yruell Y. Harris
Staff Specialist
Research & Statistics

YYH:bva
att.

December 31, 1963

Details

1963 Graduate Follow-up

I. Location of 1963 graduates in a post-high school program in Hawaii (October, 1963).

- A. Obtain list from schools offering post-high school instruction.
  1. See attached letter and form.
  2. Name and high school from which graduated.

- B. Obtain registration data cards from University of Hawaii Data Processing.
  1. Type 1
  2. Type 2
  3. Type 3
  4. Type 4

II. Data card preparation for distribution to high schools (November-December, 1963).

- A. Where student location unknown.
  1. Enter identifying information from 1963 Graduate Survey Master Name Card. (See card layout)
  2. Enter high school code and name.

- B. Where location known (school attending):
  1. Enter identifying information from 1963 Graduate Survey Master Name Card. (See card layout)
  2. Enter high school code and name.
  3. Enter appropriate type of school attending in proper position (1-6). (See code for schools offering post-high school program).
  4. Enter name of school attending in blank provided.
  5. Enter code in column--for school attending.

III. Carded list distribution to high schools (December, 1963).

- A. List to high schools.
  1. Alphabetical. (See attached sample).

- B. Cards arranged by groups in alphabetical order.
  1. Location unknown.
     - a. School to fill in all information.
  2. By school attending, e.g., University of Hawaii, Chaminade, etc.
     - a. School completes rank in high school class data.

C. Packaging.
  1. Package securely and firmly.
  2. Enclose instructions for completion and return of cards. (See copy of instructions).

IV. On return of cards (January 17, 1964).
  A. Audit and make corrections.
    1. Change address and other information.
      a. Clerical and key punching.

  B. Code school attending for those not previously located.
    1. Use ETS code of all colleges if available.
    2. Use local code.

  C. Key punch rank in class:

Code: 1 - 100-81%
2 - 80-61%
3 - 60-41%
4 - 40-21%
5 - 20-1%

FRESHMAN SURVEY

Office of Student Personnel, University of Hawaii

By means of this questionnaire, the University hopes to gather information about its incoming students which will enable faculty members and officials to provide more effective services. Please answer every question. A statement of clearance will be required before your registration is completed. Your cooperation is greatly appreciated. Please write the number of the answer which best describes you on the answer sheet. All answers are to be written on your answer sheet.

EXAMPLE: If you were a graduate of Waialua High in June 1960, you would put the number "42" in the space after A on your answer sheet, and "1" after B on your answer sheet.

FIRST FILL IN INFORMATION AT TOP OF ANSWER SHEET

A **From which high school did you graduate?**

1. Baldwin
2. Castle
3. Farrington
4. Hana
5. Hawaii Preparatory Academy
6. Hawaiian Baptist Academy
7. Hawaiian Mission Academy
8. Hilo
9. Honokaa
10. Iolani
11. Kahuku
12. Kailua
13. Kaimuki
14. Kamehameha
15. Kapaa
16. Kau
17. Kauai
18. Kohala
19. Konawaena
20. Lahainaluna
21. Lanai
22. Laupahoehoe
23. Leilehua
24. Maui
25. Maryknoll
26. McKinley
27. Mid-Pacific
28. Molokai
29. Pahoa
30. Punahou
31. *Radford*
32. Roosevelt
33. Sacred Hearts Academy
34. Saint Andrews Priory
35. Saint Ann's
36. Saint Anthony's
37. Saint Francis Convent
38. Saint Joseph's
39. Saint Louis
40. Star of the Sea
41. University High
42. Waialua
43. Waianae
44. Waimea
45. Waipahu
46. Other
47. None, DPI certificate

B **When did you graduate from high school?**

1) 1960
2) 1959
3) 1958 and before

C

How many college credits have you already earned? (For example, if you earned three credits in summer session you would write "2" on your answer sheet.)

1) None
2) 1-10
3) 11-20
4) 21+

D

In which college have you been accepted?

1. Arts and Sciences
2. Tropical Agriculture
3. Business Administration
4. Education
5. Engineering
6. Nursing
7. General Studies

E

Write the number of the one curriculum below in your college which you prefer at the present time.

Tropical Agriculture

1. Agricultural Economics
2. Agricultural Entomology
3. Animal Science
4. General Agriculture
5. Plant Physiology
6. Poultry Science
7. Soil Science
8. Tropical Crop Production
9. Tropical Horticulture
10. Clothing Design
11. Foods and Nutrition
12. General Home Economics
13. Home Economics Education
14. Institutional Management

Engineering

15. Civil
16. Electrical
17. General
18. Mechanical

Business Administration

19. Accounting
20. Banking and Finance
21. General Business
22. Merchandising
23. Office Management
24. Personnel and Industrial Relations

Education

25. Preschool-Primary
26. Elementary
27. Secondary
28. Dental Hygiene
29. Recreation

Nursing

30. Nursing
31. Medical Technology

Arts and Sciences continued on next page

E (continued)
Arts and Science students are asked to choose a major field at the end of the sophomore year. If you are in Arts and Sciences, so far as you can tell now, which will you choose? Write its number on the answer sheet.

Arts and Sciences

32. Anthropology
33. Art
34. Asian Studies
35. Botany
36. Chemistry
37. Chinese
38. Drama and Theater
39. Economics
40. English
41. Entomology
42. Fine Arts
43. French
44. Geography
45. Geology
46. German
47. Government
48. History
49. Japanese
50. Journalism
51. Mathematics
52. Meteorology
53. Microbiology
54. Music
55. Philosophy
56. Physics
57. Psychology
58. Public Administration
59. Religion
60. Sociology
61. Spanish
62. Speech
63. Zoology
64. Other
65. Cannot say

College of General Studies

66. Part-time
67. Full-time, unclassified

F How sure are you now of your choice of this field of study?

1. Absolutely sure (at least 99% sure)
2. Very sure (" " 75% ")
3. Fairly sure (" " 50% ")
4. Not sure (" " 25% ")
5. Completely unsure (only 1% sure)

G I. Would you prefer to be in another University of Hawaii college or curriculum than the one in which you have been accepted?

1. Yes
2. No

II. If yes, write in on the answer sheet the number of the curriculum listed under question E that you would prefer.

H

Do you plan to transfer from the University of Hawaii to another college or university before earning your bachelor's degree?

1. Yes
2. No
3. Not sure

I

So far as you can guess now, how sure are you of graduating from college?

1. Very likely, barring things beyond my control (99% sure)
2. Probably . . . .(75% sure)
3. Fairly sure. . . . .(50% sure)
4. Not sure . . . .(25% sure)
5. Very unlikely. . . . . (only 1 chance in 100)

J

How do you feel now about further education after earning your bachelor's degree?

1. Very likely attend graduate or professional school (99% sure)
2. Probably . . . . (75% sure)
3. Fairly sure. . . . . (50% sure)
4. Not sure . . . . (25% sure)
5. Very unlikely. . . . . (only 1 chance in 100)

K

How many years have you attended school in Hawaii? (Include private or public elementary, intermediate and high school only--begin with 1st grade.)

1) none
2) 1-4
3) 5-8
4) 9-11
5) 12
6) 13 or more

L

What is your marital status?

1) single
2) married
3) no longer married

M

Legal residence as of August before entering college.

1) Honolulu
2) Rural Oahu
3) Neighbor Island
4) Continental U.S.
5) Foreign Country
6) Other

N I. What is or was your father's national-ethnic background? (Optional)

1) Caucasian
2) Chinese
3) Hawaiian & part-Hawaiian
4) Japanese
5) Filipino
6) Korean
7) Mixed
8) Other
9) I don't know
10) I prefer not to answer

II. What is or was your mother's national-ethnic background? (Optional)
Please write in the number on your answer sheet from those listed above under I.

O What is your father's present or last paid occupation? Write it on your answer sheet (e.g., carpenter, Captain, U.S. Army, etc.) Please report the actual work done. Do not say Ewa Plantation.

P Now, which category below is most nearly applicable to your father's present or last paid occupation?

1. Professional (e.g., engineer, doctor, lawyer, teacher)
2. Semi-professional (e.g., announcer, technician, draftsman)
3. Managerial or Official (e.g., supervisor, store owner)
4. Clerical or Sales (e.g., real estate broker, bookkeeper)
5. Domestic or Personal Service (e.g., attendant, cook, waiter)
6. Protective (e.g., military personnel, police officer)
7. Building service workers (e.g., porters, elevator operator)
8. Agricultural, fishing & forestry (e.g., farmer, grounds keeper, fisherman)
9. Skilled (e.g., baker, butcher, electrician, mechanic)
10. Semi-skilled (e.g., truck, bus, or taxi driver, welder)
11. Unskilled (e.g., plantation laborer, stevedore)

Q Your generation in the U.S. on father's side. (Those who immigrated to the U.S. are first generation. Their children, if born in the U.S. are second generation, their grandchildren are third generation and so on. Please approximate if you are not sure. Optional)

1. First
2. Second
3. Third
4. Fourth
5. Fifth generation or beyond
6. I don't know
7. Cannot say. Family is Hawaiian
8. I prefer not to answer

R

Which is true of your father?

1. **Employed civilian**
2. **Employed military (serviceman)**
3. **Retired civilian**
4. **Retired military (last occupation)**
5. **Deceased civilian**
6. **Deceased military (last occupation)**
7. Do not know or unemployed

S

Which one best describes your father's education?

1) None or unknown
2) **1-4 years**
3) **5-8 years**
4) **9-11 Years**
5) **High school graduate**
6) **1-3 years of college**
7) **College graduate**
8) **Professional or graduate school**
9) **Trade or technical school graduate**

T

What do you hope eventually to be? Write the number of one only.

1. **Accountant**
2. **Actor or Actress**
3. **Agriculturist**
4. **Architect**
5. **Bacteriologist**
6. **Bank & Finance worker**
7. **Biologist**
8. **Bookkeeper**
9. **Business owner**
10. **Chemist**
11. **Clerk**
12. **Commercial artist**
13. **Commercial pilot**
14. **Cosmetologist**
15. **Counselor**
16. **Dental hygienist**
17. **Dentist**
18. **Designer or Draftsman**
19. **Dietician**
20. **Doctor**
21. **Electrician**
22. **Engineer**
23. **Entomologist**
24. **Farmer**
25. **Fashion designer**
26. **Fireman**
27. **Fisherman**
28. **Foreman or Supervisor**
29. **Government service**
30. **Home economist**
31. **Housewife**
32. **Interior decorator**
33. **Journalist or Writer**
34. **Laboratory technician**
35. **Lawyer**
36. **Librarian**
37. **Machinist**
38. **Mailman**
39. **Mathematician**
40. **Mechanic**
41. **Medical technologist**
42. **Minister**
43. **Musician**
44. **Nurse**
45. **Occupational therapist**
46. **Office or Personnel manager**
47. **Optometrist**
48. **Osteopath**
49. **Painter**
50. **Pharmacist**
51. **Photographer**
52. **Physical therapist**
53. **Physicist**
54. **Police officer**
55. **Professional athlete**
56. **Psychologist**
57. **Public administrator**
58. **Recreation leader**
59. **Salesman: real estate, insurance, etc.**
60. **Secretary**
61. **Serviceman: soldier, sailor, etc.**
62. **Social worker**
63. **Speech therapist**
64. **Stenographer**
65. **Stewardess**
66. **Surveyor**
67. **Teacher**
68. **Veterinarian**
69. **Zoologist**
70. **Other**
71. **Cannot say at this time**

U How about the following kinds of assistance from the University. Write the number on your answer sheet after each of the following which best describes your present feeling.

(0) No problem
(1) A problem, but I can handle it myself
(2) Would appreciate help from UH personnel
(3) Not sure, may become a problem

1. Selection of educational field
2. Choice of vocational goal
3. Study methods
4. Student loan
5. Part-time job
6. Housing
7. Making friends
8. Joining student activities
9. Getting into social activities
10. Discussion of personal affairs
11. Other (Please write in on back of answer sheet.)

Part II: Reasons for Going to College

Some of the reasons students give for going to college are listed below. Please show the degree of importance each of the reasons had in influencing your decision to attend college. Write the appropriate code symbol in the space provided on your answer sheet. Some find it easier to go through the statements and mark all of the 0's first, then the 1's, and so on. Do it the way it is easiest for you.

Try to record your reactions, not according to what you consider to be "good" reasons, but according to what you feel are your actual reasons for deciding to go to college. Add any you wish on the back of your answer sheet. Please use special answer sheet.

YOUR ANSWERS TO THESE QUESTIONS WILL BE KEPT CONFIDENTIAL

Degree or Level of Importance

(0) Of no importance; or does not apply
(1) Of slight importance
(2) Of moderate importance
(3) Of great importance

A REASONS

1. I feel that a college degree is necessary for the kind of work I want to do.
2. Business, church, or other community leaders encouraged me to go to college.
3. My teachers thought I was good college material.
4. I hope to make many new friends in college.
5. It has always been expected that I would go to college.
6. The persons I respect most in my community have gone to college.
7. I have serious intellectual curiosities which only college can satisfy.
8. I want to learn how to get along with other people.
9. I hope to prepare myself to be a success in life.

Your answers to these questions will be used for research purposes only.

(0) Of no importance, or does not apply
(1) Of slight importance
(2) Of moderate importance
(3) Of great importance

10. Most of my friends are going to college.

11. I think college life will help me to develop socially.

12. I want the close fellowship of living in a dormitory.

13. I want to explore several lines of work to see what I would be most interested in.

14. I feel that I can live an easier life if I have a college education.

15. I want to find out more about certain fields of knowledge.

16. I feel that college acquaintances and contacts will prove advantageous in finding a position after graduation.

17. I think a college education will enable me to be more influential in community affairs.

18. I think that college will be a good place to meet the type of person I'd like to marry.

19. I enjoy studying and want to continue academic work.

20. There is not much for me to do around home.

21. It will increase the reputation of my family.

22. A college degree means a great deal to me.

23. In my family young people have always gone to college.

24. The decision to come to college was pretty much made for me.

25. I feel that a college education will raise my station in life.

26. I need a college degree to go on to graduate or professional school.

27. I hope to acquire some qualifications for leadership in civic affairs.

28. My parents insist on my going to college.

29. It's the sort of thing a girl like me is expected to do these days.

30. It's the sort of thing a fellow like me is expected to do these days.

(0) Of no importance, or does not apply
(1) Of slight importance
(2) Of moderate importance
(3) Of great importance

VALUES

How much part did the following values play for you in deciding to come to college? Rate the degree of importance of each for you.

1. Aptitude (I feel that I will be able to do well in what I plan to study.)

2. Chance to serve others (It will help me to be of greater service to people.)

3. Most practical thing to do (It will be useful to me later.)

4. Preparation for specialization (I want to prepare myself for specializing in some one thing.)

5. Security of employment (I will be sure of getting a job.)

6. Potential income (It will help me later to earn a high salary.)

7. Independence (It will help me to stand on my own two feet and do things for myself and by myself.)

8. Opportunity for advancement (It will help me to get a good job in which I can get ahead in life.)

9. Easiest thing to do (What I plan to study is not hard for me to accomplish.)

10. Prestige (I will stand high among those who know me and I will be respected for what I study.)

11. Satisfaction from field (I am interested in the kind of thing I plan to study and enjoy it.)

12. Self improvement (I can help myself become a better person.)

13. Parenthood (It will help me to be a better mother or father someday.)

14. Religion (It will give me the chance to develop my religious values.)

15. Some other values not given here. Describe on back of your answer sheet.

(0) Of no importance, or does not apply
(1) Of slight importance
(2) Of moderate importance
(3) Of great importance

C INFLUENCES

How much did the following influence you in choosing to come to college? Rate the degree of importance of each for you.

1. Hobby (Things like building model airplanes or collecting records.)
2. Free time activities (Things like the "Y", church, 4-H, or just the things I do outside of school when I have free time.)
3. High school teacher (Any high school instructor I have had.)
4. Parents (My mother and father.)
5. High school courses (What I have learned in my classes at school.)
6. Work experience (Ihave had some experience with the kind of thing I plan to study.)
7. Friends (Talking things over with my friends.)
8. Relatives (Talking to my aunts, uncles, cousins, brother or sister.)
9. University counselor (I talked with a college counselor about my plans.)
10. High School counselor (I have talked with my school counselor about my plans.)
11. Aptitude and Interest Tests (Tests I have taken to find out what I am good at doing and what I like to do best.)
12. Random choice (First thing I thought of. I did not think about plans after high school until now.)
13. Career Day Program (The kind of program we had in high school which was about career and college possibilities.)
14. Movies and T.V. (I have seen on T.V. and in the movies the kind of thing I plan to study.)
15. People in the field (I have talked to people who are doing the kind of thing I plan to study.)
16. ROTC (The training I received in my high school ROTC program.)
17. Reading (What I have learned about college from books and magazines.)
18. High school principal (He encouraged me to go to college.)
19. Some other influences not given here. Describe on back of your answer sheet.

(0) Of no importance, or does not apply
(1) Of slight importance
(2) Of moderate importance
(3) Of great importance

D INTERESTS

How much did the following interests contribute to your decision to come to college. Rate the degree of importance of each for you.

Work with:

1. Words (such as writing, reading, speaking, etc.)
2. Ideas (such as planning, analyzing, thinking about things, etc.)
3. Food (such as cooking, baking, etc.)
4. Machines (such as cars, appliances, calculators, etc.)
5. Numbers (such as figuring, arithmetic, etc.)
6. Adults (such as directing or helping adults, selling things to them or being a leader for them.)
7. Music (such as playing the piano, dancing, singing, etc.)
8. Children and Youth (such as teaching little children, playing with them and taking care of them.)
9. Science (such as studying about living things, the heavenly bodies, etc.)
10. Plants and animals (such as farming and growing things.)
11. Art (such as drawing, painting, etc.)
12. Recreation (such as parties, athletics, goodtimes, etc.)
13. Travel (such as visiting new places and meeting new people.)
14. Some other things not listed here. Write in your own interest on the back of your answer sheet.)

UNIVERSITY OF HAWAII FRESHMAN SURVEY
Answer Sheet

Date___________

Age______

Print full name_______________________ Sex: Male___ Female___

Part I		Part II				
A. ___	P. ___	A. Reasons:		B. Values:	C. Influences:	D. Interests
B. ___	Q. ___	1. ___	16. ___	1. ___	1. ___	1. ___
C. ___	R. ___	2. ___	17. ___	2. ___	2. ___	2. ___
D. ___	S. ___	3. ___	18. ___	3. ___	3. ___	3. ___
E. ___	T. ___	4. ___	19. ___	4. ___	4. ___	4. ___
F. ___	U:	5. ___	20. ___	5. ___	5. ___	5. ___
G:	1. ___	6. ___	21. ___	6. ___	6. ___	6. ___
I. ___	2. ___	7. ___	22. ___	7. ___	7. ___	7. ___
II. ___	3. ___	8. ___	23. ___	8. ___	8. ___	8. ___
H. ___	4. ___	9. ___	24. ___	9. ___	9. ___	9. ___
I. ___	5. ___	10. ___	25. ___	10. ___	10. ___	10. ___
J. ___	6. ___	11. ___	26. ___	11. ___	11. ___	11. ___
K. ___	7. ___	12. ___	27. ___	12. ___	12. ___	12. ___
L. ___	8. ___	13. ___	28. ___	13. ___	13. ___	13. ___
M. ___	9. ___	14. ___	29. ___	14. ___	14. ___	14. ___
N:	10. ___	15. ___	30. ___	15. ___	15. ___	
I. ___	11. ___				16. ___	
II. ___					17. ___	
					18. ___	
O. ___					19. ___	

POST CARD USED IN FOLLOW-UP SURVEY OF UNIVERSITY OF HAWAII FRESHMEN WHO WITHDREW VOLUNTARILY

10/15/63

Dear

According to University records you withdrew voluntarily from the University of Hawaii. Under a grant from the U.S. Office of Education we are interested in finding out more about persons like yourself. We would therefore greatly appreciate it if you would fill out the questions on the enclosed and mail it to us.

Mahalo nui,

A. A. Dole
Associate Professor of Psychology

A. Please indicate current status: 1. Housewife ___
2. Working ___ Title of your job: ____________
Type of business: ________ Firm's name: ____________
3. Studying ___ Name of School: ____________
Curriculum specialization: ____________
4. Military Service ___ Branch: ________ Rank: ________
5. Other ___ Please write in: ____________

B. Reasons for withdrawal: 1. Lack of funds ___
2. Marriage ___ 3. Not realizing my goals ___
4. Not really interested ___ 5. Preferred another school ___ 6. Not really ready for college ___
7. Seemed to lack ability ___ 8. Wanted to be independent ___ 9. Parents left Hawaii ___
10. Illness ___ 11. Personal ___ 12. Other ___
Write in: ____________

C. How about further higher education? Yes ___ No ___ Maybe ___

D. Overall, how satisfied were you with U-H? Very ___
Rather ___ Fairly ___ Mildly dissatisfied ___ Very dissatisfied ___.

E. Do you plan to return to Univer. of Hawaii to study?
Yes ___ No ___ Doubtful ___.

Thank you.

LETTER SENT TO THOSE WHO DID NOT RESPOND TO POST CARD SURVEY OF FORMER STUDENTS

March 5, 1964

UNIVERSITY OF HAWAII
Honolulu 14, Hawaii

Department of Psychology

Dear

About two months ago you received from us a post card asking for information as to what your current status was and your attitude toward education and the University of Hawaii.

We realize there are many reasons why you may not have been able to fill out the card and return it to us; perhaps you were just too busy at the time you received it. Since by now the card may have been lost, we are enclosing another copy in the hopes that you will now find time to complete and mail it.

Your response will be held in complete confidence and will be used for research purposes only. So far our returns have been encouraging, but we do need to know about you.

This project is supported by the U.S. Office of Education in cooperation with the University of Hawaii.

Sincerely,

Arthur A. Dole
Associate Professor of Psychology

APPENDIX II

Supplementary Statistical Information

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TABLE 43

STABILITY MEASURES OF REASONS INVENTORY FROM FALL TO SPRING SUMMARIZED BY DETERMINANT CLASSIFICATIONS

Measure	General	Values		Influences		Interests	
	Coll-f Curr-s	Coll-f Curr-s	Curr-f Curr-s	Coll-f Curr-s	Curr-f Curr-s	Coll-f Curr-s	Curr-f Curr-s
	(N=32)	(N=16)		(N=22)			(N=15)
Item Rank Order Correlation							
Agriculture	.80**	.79**	.79**	.84**	.91**	.91**	.96**
Nurses.	.81**	.93**	.97**	.95**	.89**	.95**	.95**
Per cent Agreement for All Responses							
Agriculture	53.8**	63.4**	58.6**	56.4**	58.7**	58.5**	58.2**
Nurses.	49.5**	59.0**	60.7**	57.3**	61.7**	65.5**	66.1**
Per cent Agreement for "of great importance"							
Agriculture	36.7**	67.9**	66.5**	32.9*	28.4*	52.6**	50.7**
Nurses.	31.6**	58.1**	60.0**	30.4	19.3	48.6	51.1**
Mean of Item Correlations[2]							
Agriculture	.40*	.47*	.50**	.46*	.37*	.52**	.44*
Nurses.	.31	.42*	.47*	.42*	.54**	.60**	.45*

Note.--Coll-f = Reasons for college administered in fall, 1963.
Curr-f = Reasons for curriculum administered in fall, 1963.
Curr-s = Reasons for curriculum administered in spring, 1964.
Subjects were 27 seniors in Agriculture and 24 in Nursing.

[2] Based on Fisher's z conversion.

*P < .05. **P < .01.

TABLE 44

COLLEGE STABILITY FROM 1960 to 1963 AMONG CONSTANT STUDENTS

College Entered 1960	College 1963																		1960 All Colleges		
	Agriculture			Engineering			Business administration			Education			Nursing			Arts & Sciences					
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Agriculture . . .	6	11	17	-	-	-	-	-	-	-	1	1	-	-	-	-	1	1	6	13	19
Engineering . . .	3	0	3	51	-	51	11	-	11	-	-	-	-	-	-	2	2	4	67	2	69
Business administration.	-	-	-	1	-	1	30	8	38	1	1	2	-	-	-	-	1	1	32	10	42
Education	-	5	5	-	-	-	1	5	6	16	155	171	-	2	2	2	12	14	19	179	198
Nursing	-	-	-	-	-	-	-	-	-	-	-	-	-	28	28	-	4	4	-	32	32
Arts & Sciences .	2	3	5	1	1	2	8	3	11	4	10	14	-	1	1	67[a]	60	127	82	78	160
1963 All Colleges	11	19	30	53	1	54	50	16	66	21	167	188	-	31	31	71	80	151	206	314	520

[a] Includes 1 College General Studies entrant.

TABLE 45

RELATION BETWEEN SECONDARY STUDY PROGRAM PREFERENCE OF 9TH GRADE PUPILS AND THEIR STUDY PROGRAM STATUS IN GRADE 11

Study Program	Study Program Status in Grade 11					No answer	All Grade 9
	College Science	College General	Technical	Business	Terminal		
College science	626	350	107	64	46	6	1,179
College general	181	793	139	193	93	4	1,403
Technical	70	119	586	80	160	12	1,027
Business.	40	142	105	688	142	4	1,121
Terminal.	14	53	146	62	156	3	434
No answer	3	11	12	8	13	1	48
All in grade 11	934	1,468	1,095	1,095	610	30	5,212

TABLE 46

MOST AND LEAST STABLE OCCUPATIONAL PREFERENCES OF PUBLIC SCHOOL BOYS AND GIRLS

Occupational preference	9th Grade N	Stability %
Most Stable for Boys		
Dancer, singer	15	47
Mechanic	351	41
Engineer	504	40
Biologist.	28	39
Most Stable for Girls		
Teacher.	613	58
Secretary.	635	54
Beautician	60	53
Nurse.	331	45
Least Stable for Boys		
Technician	25	--
Physicist.	12	--
Musician	12	--
Supervisor	18	6
Least Stable for Girls		
Architect.	12	--
Cannery worker	13	--
Mathematician.	27	7
Musician	12	8

TABLE 47

STABILITY IN NATIONAL-ETHNIC ANCESTRY REPORTED BY PUBLIC SCHOOL STUDENTS

"My father is . . ."	Males					Females				
	Grade 9	Grade 11	Net change	Status in Grade 11 entered	Status in Grade 11 stable	Grade 9	Grade 11	Net change	Status in Grade 11 entered	Status in Grade 11 stable
	N	N	%	%	%	N	N	%	%	%
Caucasian	136	116	- 15	23	63	143	120	- 16	25	59
Chinese	71	74	4	14	90	85	94	11	19	92
Hawaiian.	53	33	- 38	15	53	31	24	- 23	26	52
Filipino.	132	137	4	14	90	161	151	- 6	5	89
Korean.	16	21	31	44	88	19	17	- 11	11	79
Japanese.	718	739	3	5	98	1,024	1,060	4	6	98
Other	57	46	- 19	33	47	43	27	- 37	23	40
Mixed (Part Hawaiian)[1]. . . .	97	103	6	53	54	84	105	25	54	71
I don't know. . . .	9	14	56	122	33	5	2	- 60	40	--
No answer	4	10	133	250	--	5	--	-100	--	--
All ancestries. . .	1,293	1,293		16	84	1,600	1,600		11	89

[1] The option, Part Hawaiian, was added to the Grade 11 inventory.

TABLE 48

VARIABLES COMPRISING SUBORDINATE FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
	Freshman survey			Senior survey	
	dropped	males	females	males	females
Factor A					
B-1 Value of aptitude .			-39	-33	
B-14 Value of religion.			18	21	
C-7 Influence of friends	42	50	36	31	48
C-8 Influence of relatives	33	52	26	50	
C-13 Influence of career day.				40	
C-4 Influence of parents		48			
A-10 Friends going to college					30
C-6 Influence of work experience.	40				
A-2 Community leaders encouraged.	30				
B-13 Value of parenthood.	39				
Factor B					
A-17 More influential in community.			28	-26	-16
B-3 Value of most practical thing . . .			-16	22	17
C-14 Influence of movies and TV		22		-52^{a}	-40^{a}
C-15 Influence of people in field.				-31^{a}	-47^{a}
C-17 Influence of reading		24			-51^{a}
D-6 Interest in work with adults			-17	-20^{a}	-16^{a}
D-10 Interest in plants and animals		60	-18	-21	-19
C-13 Influence of career day.				-31	
B-10 Value of prestige.	-40		-18	-25	
B-14 Value of religion.	-36			-49	
D-8 Interest in children and youth. .		20		-31	

(Table continued next page)

Note.--Criteria for inclusion in this table: >30 on one survey; or >15 on two surveys. Decimal points omitted.

[a] Also included in major factor IX.

TABLE 48 (Cont'd)

VARIABLES COMPRISING SUBORDINATE FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
	Freshman survey			Senior survey	
	dropped	males	females	males	females
Factor B (Cont'd)					
C-7 Influence of friends			-32		
B-9 Value of easiest thing to do	-57		-48		
A-23 In my family people always go	-36				
Factor C					
A-27 Leadership in community			21	33	
A-17 Be more influential in community.			25	28	-15
B-10 Value of prestige.				27	48
A-25 Raise my station in life			31	22	22
A-21 Increase reputation family.			24	22	53
A-6 Persons respected most gone			36		
A-23 In family people always gone			32		
Factor D					
A-30 Sort of thing fellow like me expected. . .			44		44
B-1 Value of aptitude .			-28		25
Factor E					
D-8 Interest in children and youth			53		47
D-12 Interest in recreation.			45		
C-2 Influence of free time activities . . .			24		20
D-11 Interest in art. .					47
D-7 Interest in music .					47
A-1 Degree necessary for work					30

(Table continued next page)

TABLE 48 (Cont'd)

VARIABLES COMPRISING SUBORDINATE FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
	Freshman survey			Senior survey	
	dropped	males	females	males	females
Factor F					
D-11 Interest in art . .		21		56	
A-13 Wanted to explore several lines.		48			
A-21 Increase reputation of family.		18		18	
B-9 Value of easiest thing to do.		16		17	
C-5 Influence of work experience		33			
Factor G					
A-9 Prepare self for success in life. . . .	49	-52			
A-22 College degree means great deal . . .	20	-44			
A-25 Raise my station in life.	20	-34			
-8 Opportunity for advancement.	24	-23			
B-4 Value of specialization	48				
A-17 Be more influential in affairs	36				
A-16 Contacts advantageous	32				
Factor H					
C-11 Influence of aptitude, interest tests.	60				
C-9 Influence of high school counselor . . .	41				
Factor J					
B-3 Value of most practical thing to do.		-60			
D-2 Interest in ideas. .		39			
B-12 Value of self-improvement.		-32			

(Table continued next page)

TABLE 48 (Cont'd)

VARIABLES COMPRISING SUBORDINATE FACTORS AND THEIR LOADINGS ON FRESHMAN AND SENIOR SURVEY ANALYSES

Variable	Loading				
	Freshman survey			Senior survey	
	dropped	males	females	males	females
Factor K					
A-14 Live an easier life		39			
B-1 Value of aptitude. .		47			
Factor L					
C-13 Influence of career day program.			53		
Factor M					
C-5 Influence of high school courses				60	
C-3 Influence of high school teacher				53	

TABLE 49

FACTORS DETERMINING EDUCATIONAL DECISION IN SELECTED PUBLIC SCHOOL SAMPLES

Item	Hawaii General						Hawaii Science				
	I	II	III	IV	V	VI	I	II	III	IV	V
E-1 Hobby . .	32	-14	02	-19	-18	-02	-08	16	33	18	-09
E-2 Free time	09	-15	-12	-30	-17	07	-15	08	44	-03	00
E-3 Teacher .	-10	-19	13	14	-20	01	05	-32	17	-28	-26
E-4 Parents .	-05	-40	05	-05	09	11	03	-26	11	-60	-09
E-5 Class . .	-11	-39	-09	-12	-02	-15	-02	-09	19	00	-32
E-6 Experience	23	-21	05	-23	-17	-03	07	02	20	11	-14
E-7 Friends .	-05	-25	-30	-14	-01	-20	-02	-24	16	-12	00
E-8 Relatives	-09	-35	-13	-00	05	-09	-01	-09	26	-29	-02
E-9 Counselor	-05	-14	-03	-06	04	-16	18	-61	06	-04	02
E-10 Tests. .	-07	-38	11	05	05	06	08	01	12	-08	-45
E-11 Random .	-10	-29	-05	01	31	09	(not included)				
E-12 Career .	-00	-26	00	01	01	-33	11	-61	06	06	04
E-13 Movies .	-05	-08	-12	-26	-09	05	-15	17	48	06	00
E-14 People .	-01	-21	-02	-08	-05	06	-01	-06	23	-08	-00
F-1 Aptitude.	12	-34	-01	03	-15	-04	01	-07	10	-28	-50
F-2 Serve . .	-23	-04	21	-45	05	-07	-03	-14	26	-26	02
F-3 Practical	00	-45	08	10	08	-08	-02	-14	24	-02	-08
F-4 Specialize	01	-39	-02	-10	-19	-19	-07	01	29	-11	-30
F-5 Security.	16	-30	00	-13	-00	37	-05	-26	23	-04	-27
F-6 Income. .	18	-45	-08	02	-01	20	-06	-15	28	00	-16
F-7 Fastest path. .	-06	-13	-16	-36	02	12	(not included)				
F-8 Independence .	-01	-43	-14	-20	-03	-03	-05	-04	58	-06	00
F-9 Advancement. .	05	-43	07	-05	01	21	05	-49	09	-08	-30
F-10 Easy . .	04	-04	-26	-26	-14	07	(not included)				
F-11 Prestige	-06	-30	15	-21	-07	07	-04	-03	27	-29	-25
F-12 Satisfaction	-05	-47	04	06	-15	-04	-06	00	42	01	-41
F-13 Improvement .	01	-31	-06	-29	03	00	-01	-33	47	-28	02
F-14 Parenthood .	-08	-13	-06	-23	20	24	02	-22	42	-20	03

(Table continued next page)

TABLE 49 (Cont'd)

FACTORS DETERMINING EDUCATIONAL DECISION IN SELECTED PUBLIC SCHOOL SAMPLES

Item	Hawaii General						Hawaii Science				
	I	II	III	IV	V	VI	I	II	III	IV	V
G-1 Words . . .	-29	-32	-15	08	-20	03	-117	13	20	00	-09
G-2 Ideas . . .	06	-31	13	-20	-13	18	00	-16	33	02	-04
G-3 Food. . . .	-29	-07	-16	-21	39	03		(not included)			
G-4 Machines. .	56	-10	-12	-11	-09	23	- 04	-06	34	56	-18
G-5 Numbers . .	19	-39	12	-21	02	-12	- 04	-32	-08	03	-38
G-6 Adults. . .	-09	-14	-09	-27	-17	18	- 05	-17	32	-11	-04
G-7 Music . . .	-10	-25	-10	-21	12	01	64	52	35	-06	-34
G-8 Children. .	-47	-07	09	-37	08	-09		(not included)			
G-9 Science . .	28	-31	28	-09	11	-02	- 06	08	21	01	-33
G-10 Plants . .	15	-33	-09	-20	24	-14	- 02	11	28	-25	-15
G-11 Arts . . .	17	-21	-14	-17	10	26	75	12	50	08	-07
Male.	76	04	04	-03	07	07		(not included)			
A Japanese. . .	01	-13	15	13	-17	-27					
C Science program . .	03	-04	51	-06	24	00					
D Sureness. . .	-08	-10	12	05	-48	04					
H Change. . . .	-08	-06	38	09	-05	-08					
L College plan.	-16	-19	54	02	-22	00					

(Table continued next page)

TABLE 49 (Cont'd)

FACTORS DETERMINING EDUCATIONAL DECISION IN SELECTED PUBLIC SCHOOL SAMPLES

Item	Oakland									
	I	II	III	IV	V	VI	VII	VIII	IX	X
J-1 Hobby . . .	04	-04	10	15	-01	-04	02	-04	08	04
J-2 Free time .	06	-08	12	22	-02	-05	-03	00	05	06
J-3 Teacher . .	-14	-09	07	06	-03	04	04	-02	01	17
J-4 Parents . .	-12	-15	26	06	-14	07	12	-00	01	12
J-5 Classes . .	-35	-18	05	-01	-07	-04	10	-01	02	07
J-6 Experience.	01	00	-07	40	-03	03	05	-02	00	03
J-7 Friends . .	-12	-13	03	04	-05	-14	10	06	03	08
J-8 Relatives .	-06	-06	03	10	00	02	04	00	03	-05
J-9 Counselor .	-18	-06	08	-06	06	-01	13	-04	02	03
J-11 Tests. . .	-11	-09	07	08	-03	-02	05	-04	01	-01
J-12 Random . .	09	00	-02	-02	04	-27	01	-01	01	01
J-14 Career day	06	-01	04	16	-04	-08	00	07	-02	-10
J-15 Movies . .	-02	-12	-04	07	00	-13	09	-12	-04	-05
J-17 People . .	06	-14	06	19	-04	08	05	-04	05	07
K-1 Aptitude. .	-10	-19	09	07	-06	-01	17	-02	03	13
K-2 Serve . . .	-05	-06	04	16	-01	04	-05	02	-02	06
K-3 Practical .	-05	-21	13	03	-11	00	20	04	-02	07
K-4 Specialize.	-04	-10	06	12	-02	04	18	-03	03	02
K-5 Security. .	-05	-17	05	22	07	00	31	00	08	04
K-6 Income. . .	-03	-18	06	10	03	-09	51	03	05	-05
K-7 Fastest . .	-03	01	-08	-04	-03	-41	-01	-01	00	00
K-8 Independence	-11	-30	14	06	07	-03	21	-08	00	03
K-9 Advancement	-07	-16	01	07	-05	04	40	-13	05	01
K-10 Easy courses	00	01	-05	05	00	-40	04	05	-05	-02
K-11 Prestige .	-05	-17	06	04	-05	-03	31	-06	-04	06
K-12 Satisfaction . .	-01	-20	00	15	-13	11	15	-04	-10	06
K-13 Improvement . .	-19	-24	11	-02	-17	07	12	-09	-03	07
K-14 Parenthood	-16	-17	11	10	-05	-10	09	04	04	02

(Table continued next page)

TABLE 49 (Cont'd)

FACTORS DETERMINING EDUCATIONAL DECISION IN SELECTED PUBLIC SCHOOL SAMPLES

Item	Oakland										
	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI
J-1 Hobby .	-01	-03	-03	-33	-06	-11	-05	-01	-35	-04	02
J-2 Free time. . .	-09	-02	16	-30	-01	02	-04	-09	-25	04	09
J-3 Teacher	-02	-17	12	-02	-02	-05	-08	-20	-25	09	18
J-4 Parents	-12	-04	02	03	-06	14	10	-27	06	14	02
J-5 Classes	-04	-22	07	02	-10	06	-02	-10	-08	02	05
J-6 Experience. . .	04	00	04	-01	-07	08	-08	-05	-02	-12	08
J-7 Friends	-02	00	09	-09	-09	03	-05	-42	-12	-02	06
J-8 Relatives	-06	-0 5	05	-09	-07	05	-01	-37	-01	01	04
J-9 Counselor	-10	-31	-06	02	-11	06	06	-22	01	-01	21
J-11 Tests.	05	-41	11	-07	-04	03	-05	-02	-03	-01	01
J-12 Random	-01	-02	01	-13	05	00	11	-04	-04	00	03
J-14 Career day . . .	-03	-18	27	01	-02	08	-18	00	04	07	07
J-15 Movies	-07	02	33	-13	01	01	-16	07	05	01	08
J-17 People	08	-12	28	-09	-14	06	-13	-08	-06	00	17
K-1 Aptitude	06	-40	15	-09	-09	00	01	-03	-13	09	02
K-2 Serve .	11	-03	27	-07	-06	17	-013	-05	-03	14	40
K-3 Practical	01	-16	05	-12	-08	08	-03	-24	-16	00	-04
K-4 Specialize	04	-10	15	-04	-05	01	-31	-11	-22	14	-01
K-5 Security	18	-21	07	00	-04	00	-07	-13	05	-09	03
K-6 Income.	-03	-13	06	-04	-05	-13	-09	-07	-07	05	03
K-7 Fastest	-03	02	03	-01	04	03	02	01	04	-07	01
K-8 Independence . .	08	-08	11	-04	-06	15	00	08	-04	-20	12
K-9 Advancement. . .	03	-13	03	00	-09	-02	-10	-21	02	02	10
K-10 Easy courses .	01	-02	00	05	-01	08	-01	-01	-04	-05	00
K-11 Prestige	01	-06	06	-07	-03	01	-04	-03	-01	05	25
K-12 Satisfaction .	17	-16	14	-09	-13	04	-11	-11	-26	-01	05
K-13 Improvement . .	00	-03	03	-12	-04	19	-03	-10	-16	-03	14
K-14 Parenthood. . .	-08	-03	14	00	01	28	-13	-02	-12	-03	24

(Table continued next page)

TABLE 49 (Cont'd)

FACTORS DETERMINING EDUCATIONAL DECISION IN SELECTED PUBLIC SCHOOL SAMPLES

Item	Oakland									
	I	II	III	IV	V	VI	VII	VIII	IX	X
L-1 Words	-14	-22	-03	-11	00	12	02	-02	03	29
L-2 Ideas	-16	-18	18	-06	-03	04	04	-06	10	06
L-3 Food.	-02	-04	-02	04	06	-15	-03	02	02	-01
L-4 Machines. . .	-01	04	-09	25	-05	00	11	11	09	-09
L-5 Numbers . . .	-22	-07	-03	03	01	05	17	-03	13	-01
L 6 Adults. . . .	-07	-07	03	14	03	-07	08	-02	03	09
L-7 Music	01	-06	00	-02	-01	-02	01	08	-01	20
L-8 Children. . .	-15	-04	01	15	-02	02	-06	01	00	12
L-9 Science . . .	-10	-04	03	-02	-07	06	13	06	01	-24
L-10 Plants . . .	00	-05	04	02	-08	-04	-01	-01	- 6	-04
L-11 Art.	-04	-05	-05	00	-06	-03	-02	-02	01	-03
Male.	-02	12	-07	-04	-11	-07	16	06	02	-16
A US born	-01	-01	-01	-01	-37	-08	00	08	-06	01
N Science goal. .	-11	03	05	-08	-06	10	04	05	02	-50
D Sureness. . . .	-10	-09	15	-04	-06	08	09	-04	-04	06
M change.	-06	01	07	07	08	04	01	-02	-01	03
Q College	-12	03	16	-11	-17	16	08	00	01	06
McLymonde . . .	-09	-01	-08	-04	34	08	-02	-16	-14	-01
B H.S. father . .	-10	-08	17	05	-49	13	00	-04	01	04
C College prog. .	-17	-01	26	-12	-24	11	08	05	-06	06
E Prog. change. .	06	04	-23	06	07	-16	-01	-10	-09	00
F Little say. . .	02	00	01	- 3	01	02	01	-07	04	01
G 10 grade. . . .	09	04	-36	04	05	-08	00	-08	08	02
I H.S. help . . .	-35	-03	10	00	04	01	-04	-05	00	-04
N Non-sci goal. .	-03	-01	04	03	-07	03	02	02	-01	54
P Prof. dad . . .	04	-05	13	06	-49	09	00	02	-01	01
Years in state. .	-02	-06	05	00	00	02	08	41	-02	02

(Table continued next page)

TABLE 49 (Cont'd)

FACTORS DETERMINING EDUCATIONAL DECISION IN SELECTED PUBLIC SCHOOL SAMPLES

Item	Oakland										
	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI
L-1 Words .	06	-06	16	01	-19	15	00	-06	-02	06	00
L-2 Ideas .	06	-01	18	05	-24	-07	02	-05	-26	05	25
L-3 Food. .	-04	-03	-04	-02	-05	39	01	01	00	-06	06
L-4 Machines	-04	-07	-14	-08	-10	-16	-06	00	-04	-39	-02
L-5 Numbers	06	-30	-07	-19	-09	06	-03	-10	03	03	02
L-6 Adults.	02	02	08	-04	-05	16	-01	-04	-02	01	40
L-7 Music .	-15	-12	02	-07	-15	17	01	02	-14	08	13
L-8 Children	-01	-03	08	07	-03	44	-15	-16	-07	12	23
L-9 Science	-03	-17	08	-41	-15	-09	01	-06	-06	19	05
L-10 Plants	04	-04	09	-46	00	02	-03	-08	01	05	03
L-11 Art. .	04	00	-01	-01	-04	07	-06	-02	-42	05	02
Male. . . .	-25	01	-13	-20	00	-36	04	17	-04	03	-03
A US born .	-01	00	02	-02	-03	-02	-01	-04	-01	-03	01
N Science .	07	-07	09	-12	-06	-01	-04	-02	-07	31	05
D Sureness.	24	01	06	-05	-06	-01	-16	-06	08	14	01
M Change. .	08	02	04	00	-04	03	-33	03	-05	-02	02
Q College .	03	-04	03	-12	-03	-07	-10	01	-13	58	09
McLymonde	-25	16	01	00	-03	08	-03	10	14	-11	-04
B H.S. father	03	-02	03	-07	-02	00	06	00	-09	19	02
C College prog. . .	05	-10	04	-21	-09	-06	-07	-06	-07	56	10
E Prog. change. .	-16	05	-08	05	-01	04	14	05	-02	12	-07
F Little say . . .	-43	01	04	00	04	01	05	-03	03	01	-01
G 10 grade.	-02	02	06	05	08	-01	11	00	-02	-07	-02
I H.S. help	06	-05	-03	01	-05	03	-10	-06	01	08	05
N Non-sci prof. . .	05	-04	-03	03	-03	01	-07	00	00	18	12
N Sci.prof.	07	-07	09	-12	-06	-01	-04	-02	-07	31	05
P Prof. dad	08	-01	07	-12	-06	-01	-04	-02	-07	31	05
Years in state . .	03	02	02	-01	-01	06	-04	-03	02	00	01

(Table continued next page)

TABLE 49 (Cont'd)

FACTORS DETERMINING EDUCATIONAL DECISION IN SELECTED PUBLIC SCHOOL SAMPLES

Item	Oakland									
	I	II	III	IV	V	VI	VII	VIII	IX	X
J-16 Reading . . .	-07	-20	-01	06	-09	01	05	-04	03	-01
J-18 Other influence . .	02	-01	03	-03	06	-01	-03	02	-44	03
J-19 No influence.	04	03	-17	-19	-03	-01	04	04	04	-03
K-15 Achievenent .	-09	-12	-00	01	06	05	15	-47	-01	04
K-16 Other value	06	03	11	-04	-06	02	-03	-02	-36	-06
K-17 No value. . .	-02	08	-18	-08	04	07	-10	10	02	02
L-12 Other interest	-06	00	-08	05	-09	-06	04	01	-40	03
L-13 No interest .	18	04	05	-06	02	-11	-01	-06	-05	-05

(Table continued next page)

TABLE 49 (Cont'd)

FACTORS DETERMINING EDUCATIONAL DECISION IN SELECTED PUBLIC SCHOOL SAMPLES

Item	Oakland										
	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI
J-16 Reading . . .	01	-11	45	-15	-10	-03	-11	-11	-11	07	19
J-18 Other influence	-04	02	03	-01	-02	02	-01	10	00	00	01
J-19 No influence	16	09	-14	-02	40	03	04	22	-03	02	-02
K-15 Achievement . .	-05	-03	05	-02	-04	07	-09	00	-01	01	03
K-16 Other value . .	02	-03	-09	-05	08	-02	14	-04	-04	05	-01
K-17 No value . .	-18	06	00	-03	37	-04	-01	03	01	-06	-01
L-12 Other interests	-03	03	02	02	-02	-04	-11	-07	07	00	-13
L-13 No interest	-06	00	01	12	55	-07	14	04	09	05	-06

TABLE 50

FACTOR SCALE STANDARD DEVIATIONS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College		Withdrew	Delayed	Transfer	No record	Failed	Constant
Vocational Reason							
Arts & Sciences	m.	1.01	0.48	0.57	--	0.54	0.54
Bus. Admin. . .	m.	0.45	0.61	0.66	0.40	0.57	0.76
Engineering . .	m.	--	0.34	--	0.30	0.47	0.32
Arts & Sciences	f.	0.76	0.65	1.04	1.23	0.65	0.58
Bus. Admin. . .	f.	0.37	0.31	0.50		0.59	0.49
Education . . .	f.	--	--	0.49	0.33	0.28	0.26
Social Reason							
Arts & Sciences	m.	5.51	4.54	4.92	4.76	4.90	4.77
Bus. Admin. . .	m.	3.53	4.81	4.63	6.71	4.91	5.19
Engineering . .	m.	3.51	4.37	4.70	3.42	4.46	5.47
Arts & Sciences	f.	4.57	3.62	4.66	4.48	4.42	5.05
Bus. Admin. . .	f.	2.91	5.10	2.86	3.01	3.21	6.06
Education . . .	f.	4.26	3.75	5.22	4.33	4.63	4.23
Conformity							
Arts & Sciences	m.	7.36	7.94	8.02	6.13	8.59	7.93
Bus. Admin. . .	m.	6.57	7.66	5.63	11.00	7.50	8.02
Engineering . .	m.	7.76	6.76	8.59	7.55	7.74	5.47
Arts & Sciences	f.	6.03	8.55	8.24	7.36	7.66	6.73
Bus. Admin. . .	f.	3.89	5.59	6.30	7.00	7.22	8.59
Education . . .	f.	5.41	7.86	6.00	7.93	7.20	6.93
Curiosity							
Arts & Sciences	m.	2.57	2.03	2.41	2.38	2.13	2.16
Bus. Admin. . .	m.	2.06	2.54	2.27	1.99	2.33	2.16
Engineering . .	m.	1.42	2.40	1.50	2.02	2.15	2.17
Arts & Sciences	f.	2.27	2.37	2.34	2.24	2.41	2.31
Bus. Admin. . .	f.	1.25	2,83	2.45	2.06	1.80	2.49
Education . . .	f.	1.89	2,29	2.10	2.04	1.97	2.26
Academic Value							
Arts & Sciences	m.	4.29	3.93	3.48	2.91	3.07	2.95
Bus. Admin. . .	m.	4.47	3.33	3.58	4.31	3.44	3.12
Engineering . .	m.	2.55	3.16	2.68	2.20	3.15	3.19
Arts & Sciences	f.	3.70	2.87	3.85	5.25	3.19	3.54
Bus. Admin. . .	f.	1.46	3.41	364	1.26	2.42	3.14
Education . . .	f.	2.21	2.99	3.83	2.70	3.12	2.87

(Table continued next page)

TABLE 50 (Cont'd)

FACTOR SCALE STANDARD DEVIATIONS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College		Withdrew	Delayed	Transfer	No record	Failed	Constant
Material Value							
Arts & Sciences	m.	6.35	4.51	4.75	3.03	4.79	5.04
Bus. Admin. . .	m.	2.73	3.48	3.29	5.55	4.03	3.27
Engineering . .	m.	2.64	3.86	2.75	2.68	3.96	4.99
Arts & Sciences	f.	5.21	5.19	5.89	6.54	3.43	5.05
Bus. Admin. . .	f.	1.11	6.60	1.48	3.01	5.00	4.30
Education . . .	f.	3.03	3.93	4.33	4.29	5.24	3.94
Altruistic Value							
Arts & Sciences	m.	3.91	3.51	3.65	3.67	3.60	3.28
Bus. Admin... .	m.	2.64	2.41	2.62	4.05	3.18	3.02
Engineering . .	m.	2.01	2.57	2.99	2.54	3.02	3.52
Arts & Sciences	f.	3.03	3.13	3.11	3.68	3.43	3.85
Bus. Admin. . .	f.	2.29	3.63	2.59	2.90	3.42	4.59
Education . . .	f.	2.19	1.76	2.10	2.69	2.53	2.52
School Influence							
Arts & Sciences	m.	4.03	4.74	3.17	3.73	3.91	3.67
Bus. Admin. ...	m.	2.38	4.27	5.19	5.10	4.86	3.40
Engineering . .	m.	2.61	4.24	4.94	3.75	4.37	3.62
Arts & Sciences	f.	4.12	4.45	3.71	4.42	4.11	3.79
Bus. Admin. . .	f.	3.55	3.10	3.77	2.71	4.58	2.95
Education . . .	f.	3.51	3.68	3.36	3.29	4.15	4.16
Influence of Experience							
Arts & Sciences	m.	3.27	3.17	2.82	2.91	2.90	2.60
Bus. Admin. . .	m.	2.92	2.80	2.12	3.03	2.67	2.89
Engineering . .	m.	2.87	2.60	2.94	2.62	2.72	2.82
Arts & Sciences	f.	3.05	3.19	3.36	3.04	3.11	2.74
Bus. Admin. . .	f.	2.52	1.95	1.79	2.45	2.84	2.67
Education . . .	f.	2.08	2.39	2.80	2.42	2.62	2.48
Avocational Interest							
Arts & Sciences	m.	1.72	1.62	1.90	1.62	1.93	1.72
Bus. Admin. . .	m.	--	1.26	2.05	1.60	1.45	1.28
Engineering . .	m.	1.34	1.72	1.58	1.67	1.63	1.68
Arts & Sciences	f.	2.15	1.82	1.74	1.46	1.66	1.68
Bus. Admin. . .	f.	1.86	1.25	0.83	1.96	1.76	2.03
Education . . .	f.	1.17	1.90	1.56	1.73	1.81	1.48

(Table continued next page)

TABLE 50 (Cont'd)

FACTOR SCALE STANDARD DEVIATIONS OF MALES AND FEMALES IN SELECTED COLLEGES BY STATUS ON FOLLOW-UP

College		Withdrew	Delayed	Transfer	No record	Failed	Constant
Science Interest							
Arts & Sciences	m.	2.92	3.23	2.95	3.07	2.88	2.55
Bus. Admin. . .	m.	1.28	2.36	2.73	2.94	2.94	2.90
Engineering . .	m.	2.65	2.39	1.96	2.52	2.27	2.23
Arts & Sciences	f.	3.27	2.48	2.65	3.35	2.79	2.95
Bus. Admin. . .	f.	3.26	3.22	2.77	1.47	2.65	1.51
Education . . .	f.	1.96	2.55	1.75	2.55	2.52	2.41
Humanities Interest							
Arts & Sciences	m.	2.62	3.10	2.06	2.18	2.76	2.48
Bus. Admin. . .	m.	0.76	2.19	2.89	2.04	2.81	2.26
Engineering . .	m.	1.79	2.83	2.90	2.75	2.51	2.67
Arts & Sciences	f.	3.12	2.74	2.54	2.67	3.21	2.58
Bus. Admin. . .	f.	3.40	2.38	2.50	2.04	3.05	1.64
Education . . .	f.	3.33	2.90	2.45	2.84	3.31	3.03
Verbal Interest							
Arts & Sciences	m.	2.47	2.17	2.00	1.54	2.08	1.97
Bus. Admin. . .	m.	1.98	2.31	2.26	2.42	2.45	1.93
Engineering . .	m.	1.68	2.40	1.63	1.36	2.14	2.65
Arts & Sciences	f.	2.18	2.05	1.84	2.32	2.11	1.81
Bus. Admin. . .	f.	2.63	2.20	2.45	1.72	2.22	2.19
Education . . .	f.	2.01	1.55	2.28	1.22	2.17	2.09

TABLE 51

SIGNIFICANCE OF CHANGES IN THE OPTION DISTRIBUTIONS OF SELECTED ITEMS FROM GRADE 9 TO GRADE 11 FOR CONSISTENT AND INCONSISTENT GROUPS (CHI SQUARES)

Item	College male		College female		Technical male		Business female	
	C	I	C	I	C	I	C	I
National-ethnic origin (10 options)	26.91**	12.43*	45.25**	6.83	14.36*	7.69	12.22	6.33
df. .	7	7	6	6	6	6	6	6
Generation in U.S. (5 options).	33.50**	20.32**	23.65**	64.07**	37.61**	12.51*	28.32**	27.43**
df. .	4	4	4	4	4	4	4	4
Sureness about program (5 options).	5.64	30.38**	48.42**	17.57**	2.66	1507**	9.56*	9.77*
df. .	4	4	5	5	4	4	4	4
Anticipated change in ideas about self- (5 options)	33.47**	17.68**	65.91**	85.30**	15.55**	39.41**	45.56**	13.81**
df. .	4	4	4	4	4	4	4	4
Occupational goal classification (82 options)	14.65*	51.18**	47.00**	135.04**	7.84	9.95	14.15*	45.90**
df. .	6	7	5	5	6	8	7	6
Father's occupation.	24.71**	21.98**	10.44	17.95	11.36	6.80	15.06*	10.91
(82 options) df. .	8	8	8	8	8	6	6	6
Plans after graduation . .	16.76**	131.39**	32.85**	107.89**	36.31**	31.10**	8.82	5.56
(6 options) df. .	3	4	3	3	3	3	4	3
N. .	456	384	816	451	205	248	232	101

Note.--χ^2 for correlated groups applied to grade 9 versus grade 11 option distributions.
*P < .05. **P < .01.

TABLE 52

THE RELATION OF STUDY PROGRAM PREFERENCE IN GRADE 9 TO CONSISTENCY OF EDUCATIONAL-VOCATIONAL STATUS IN GRADES 11, 12, AND AFTER GRADUATION

Study program preferred	Consistent Status				
	Sample	Grade 9 N	Grade 11 %	Grade 12 %	Follow-up %
College science and general . . .	male	888	75	55	48
	female	1,317	77	63	62
Technical	male	582	67	40	36
	female	245	40	24	20
Business.	male	130	29	17	7
	female	771	69	56	32
Terminal.	male	177	29	10	7
	female	159	43	22	15

Note.--Per cents are based on Grade 9 figure for sample.

TABLE 53

NUMBER OF SEMESTERS COMPLETED AT THE UNIVERSITY OF HAWAII BY COLLEGE MALES AND FEMALES IN A NON-CONTINUING FOLLOW-UP STATUS

Number of semesters completed	Status			
	Withdrew	Transfer	No Record	Failed
6	5	2	3	9
5	4	6	2	16
4	22	54	7	47
3	11	4	8	75
2	25	30	29	212
1	24	12	24	173
None	13	23	9	46
Incomplete data	--	--	58	--
Total	104	131	140	578

TABLE 54a

ANALYSES OF VARIANCE AND MULTIPLE REGRESSION, EFFECT OF ABILITY ON FACTOR SCALES, IN 18 FEMALE GROUPS

Factor scale	Variance			Multiple Regression	
	MS Among (df=17)	MS Within (df=645)	F	R_{OSPE}	t (df=661)
Vocational reason	2.055	.377	5.45**	.103	2.67*
Social reason . . .	49.477	20.859	2.37*	-.049	1.26
Conformity.	177.178	60.567	2.93**	-.026	0.67
Curiosity	17.499	5.807	3.01**	.028	0.72
Academic value. . .	20.762	11.090	1.87	.121	3.12**
Material value. . .	63.514	25.515	2.49*	.017	0.44
Altruistic value. .	47.838	10.473	4.57**	-.007	0.19
School influence. .	87.270	21.029	4.15**	-0.184	-0.47
Experience.	24.745	9.246	2.68*	-.043	1.10
Avocational influence.	4.735	2.910	1.63	.013	0.35
Science interest. .	10.789	7.736	1.39	.045	1.15
Humanities interest	16.815	8.816	1.91	-.049	1.26
Verbal interest . .	6.279	5.068	1.24	.068	1.75

Note.--t represents test for significance of R, effect of Ohio State Psychological Examination. After this analysis was completed it was found that cards of several subjects in the Failed Arts and Sciences group and in the Failed Education group were in error. Therefore, the above figures are estimates rather than exact. Means in Table 41 and standard deviations in Table 50 were corrected, however.

*P $<$ .05.

**P $<$ .01.

TABLE 54b

ANALYSES OF VARIANCE AND MULTIPLE REGRESSION, EFFECT OF ABILITY ON FACTOR SCALES, IN 18 MALE GROUPS

Factor scale	Variance			Multiple Regression	
	MS Among (df=17)	MS Within (df=712)	F	R_{OSPE}	t (df=728)
Vocational reason .	.689	1.312	0.53	.046	1.23
Social reason . . .	52.128	28.549	1.83	.008	0.22
Conformity.	107.659	71.145	1.51	-.037	1.01
Curiosity	9.834	9.175	1.07	-.013	0.35
Academic value. . .	32.691	15.585	2.10*	.045	1.22
Material value. . .	62.108	22.060	2.82*	-.028	9.76
Altruistic value. .	19.730	17.063	1.16	-.114	3.09**
School influence. .	31.021	21.339	1.45	.005	0.14
Experience.	12.539	9.912	1.26	-0.14	3.75**
Avocational influence.	8.309	3.428	2.42*	.002	0.06
Science interest. .	74.003	11.947	6.19**	.054	1.46
Humanities interest	14.979	8.909	1.68	-.058	1.59
Verbal interest . .	8.739	9.292	0.94	-.019	0.52

Note.--t represents test for significance of R, effect of score on Ohio State Psychological Examination.

APPENDIX III

Supplementary Tables

Table Page

A. Factors Underlying the Decision to Attend College Among Freshman Females . . . .

B. Factors Underlying the Decision to Attend College Among Freshman Males . . . .

C. Factors Underlying the Decision to Attend College Among Senior Females . . . .

D. Factors Underlying the Decision to Attend College Among Senior Males . . . .

E. Factors Underlying the Decision to Attend College Among Dropped Males. . . . .

F. Stability of Selected Items Among Public School Pupils. . . . .

G. Selected Variables by Status on Follow-Up Among College Students . . . .

H. Hoyt Reliabilities on Factor Scales for 36 College Samples. . . . .

I. Means on Factor Scales and Grade Point Ratio for College Samples after Adjustment for SCAT-V . . . .

J. Analyses of Variance and Multiple Regression, Adjusting for Ability, on Factor Scales in Public School Samples. . . . .

These tables have been submitted to the American Documentation Institute, Washington, D.C.